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ABSTRACT

The Edmonton Grade III Achievement: 1956-1977 study is a comparison of achievement in reading, arithmetic, and language involving all of the third grade students in a large school system. Six basic skills tests which were administered to all of the Edmonton third grade students in 1956 were reprinted and administered to all of the third grade students in Edmonton in 1977. Seventeen items were deemed inappropriate because of changes occurring since 1956; they were eliminated from the analyses. The remaining test items and procedures used in 1956 were duplicated as closely as possible in 1977. The six tests were: the Gates Word Recognition Test, the Gates Paragraph Reading Test, the reading, arithmetic and language sections of the California Achievement Tests, and the California Mental Maturity Test. The 1956 tests were rescored and item by item results for each student for each test were recorded. Although arithmetic scores declined from 1956 to 1977, the 1977 third graders scored higher in spelling and in general scholastic ability than their counterparts in 1956. Extensive item analyses and subtest score comparisons for males, females, and both sexes are included as well as test items and information for principals and teachers. (Author/JAC)

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TECHNICAL REPORT ON EDMONTON GRADE III ACHIEVEMENT 1956-1977 COMPARISONS

Technical Report on

Edmonton Grade III Achievement

1956 - 1977 Comparisons

A Study Conducted for

The Alberta Advisory Committee on Educational Studies

by

S.C.T. Clarke, V. Nyberg, W. H. Worth

The University of Alberta

under Contract to Alberta Education, Edmonton, Alberta, Canada

Approved by

The Edmonton Public School Board

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EDMONTON GRADE III ACHIEVEMENT: 1956-1977 COMPARISONS

FOREWORD

This technical report supplements in detail the GENERAL REPORT ON EDMONTON GRADE III ACHIEVEMENT: 1956-1977 COMPARISONS. The General Report presented the background of the study, the review of the literature, an account of the 1956 survey, an overview of the 1977 replication, general findings on curricular validity, and comparisons. The main results were briefly discussed. It was written for wide distribution to a general audience. The Technical Report was prepared in limited quantities for a much narrower audience such as those who might wish to do a similar study, persons interested in curriculum change and development, and scholars making in-depth studies of testing. It included the detailed data of interest to such groups.

The study was commissioned by the Minister of Education, the Honorable Julian Koziak, in the spring of 1977. It was funded through the Planning and Research Branch, Department of Education. The study was conducted for the Minister and for the Alberta Advisory Committee for Educational Studies by S. C. T. Clarke, V. Nyberg, and W. H. Worth of The University of Alberta. It was linked to a companion study on ALBERTA GRADE III ACHIEVEMENT which dealt with pupils across the whole province.

The Technical Report includes the Overview and Summary from the General Report, and also the major findings. It then presents detail on age distribution, core school comparisons, and detailed analyses of results test by test. Also included are appendices which set forth the communications to teachers and principals, and copies of the tests used (except for the Raven Coloured Progressive Matrices). The test manuals are not included in the appendices but are available in the Test Library of the Department of Educational Psychology, The University of Alberta.

One of the strengths of the study was that a total population of students, with sizeable numbers, was involved. Another was that because the original test booklets with student responses were preserved, item by item comparisons were possible. These are presented in the Technical Report.

The time and effort expended by the students, teachers, and others will have been well-spent if the results presented here in detail can serve to provide sound evidence on comparative student achievement and ability.

May 1978

S. C. T. Clarke
V. Nyberg
W. H. Worth

ACKNOWLEDGMENTS

The contribution made by many individuals, groups, and organizations was fully acknowledged in the General Report and will not be repeated here. The authors again wish to note that without this willing cooperation, the study would have been impossible. Particularly important was the time and effort of the many students, teachers, and principals which made the collection of the data possible. All schools and all teachers participated. As is always the case in a major study involving thousands of students, on any one day for a variety of reasons, some will not be able to participate. However, the number was small.

Teachers administered the tests, examined them for inappropriate items and participated in their collection and forwarding. Principals were the contact persons for the study, and made the necessary arrangements. It was the willing assistance of these two groups which made the collection of data so successful, and their part is gratefully acknowledged.

The central administration of the Edmonton Public School system willingly provided data, distributed and collected tests, and assisted in many other ways, which served to help the study.

The reader is referred to the ACKNOWLEDGMENTS section of the General Report for further detail.

The work of M. Mazeppa in the early phases of the production of the manuscript was acknowledged previously. The task she commenced was ably completed by A. Stallybrass, whose contribution is herewith gratefully acknowledged.

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CHAPTER I

OVERVIEW AND SUMMARY

Procedures

The purpose of the Edmonton Grade III Achievement: 1956-1977 study was to compare achievement in reading, arithmetic, and language involving all of the students in a large school system. The tests, which were first given in 1956, were designed to test basic skills. The Gates Word Recognition test consists of 48 items, each of which shows a picture, followed by four words, one of which is the name of the object pictured. The Gates Paragraph Reading test has 32 tasks in 24 items, each involving one or more sentences which tell the student to draw a line from one part of a picture to another, or to place an X on something described in the paragraph. In order to do these tasks the student must be able to read the paragraph. The California Achievement Test (Reading) has 85 items in 6 subtests, which are designed to measure achievement in word form, word recognition, meaning of opposites, following directions, "directly stated facts", and interpretations. The California Achievement Test (Arithmetic) has 80 items in 9 subtests, designed to measure achievement in number and sequence, money, number and time, signs and symbols, arithmetic reasoning problems, addition combinations, subtraction combinations, multiplication problems, and arithmetic fundamentals problems. The California Achievement (Language) test has 40 items in three subtests, designed to measure achievement in capitalization, punctuation, and spelling (25 of the 40 items). The California Mental Maturity test is designed to measure general scholastic ability.

These tests, which were administered to all of the Grade III students in the Edmonton Public School system about the end of May, 1956, were all reprinted. Using the same tests, about the end of May, 1977, all of the Grade III students were again tested, using procedures which were, insofar as was possible, identical with those used in 1956.

Because many changes have occurred in the intervening years, teachers were invited to indicate any test items which they deemed inappropriate. In addition, supervisors in elementary education from the school system and experts from The University of Alberta were also invited to identify such items. Although students attempted to do all of the items, when results were computed those identified as unsuitable by the teachers, supervisors, and experts were eliminated for purposes of the comparisons.

A total of 17 items deemed inappropriate were identified: four from the Gates Word Recognition test, one (with two parts) from the Gates Paragraph Reading test, and twelve from the California

Achievement Test (Arithmetic). The identification of a greater proportion of arithmetic items is not surprising because it is generally recognized that achievement in many aspects of arithmetic is closely related to what is included in the curriculum or actually taught.

The original tests used by the students in 1956 had been retained. These were rescored so that the results could be placed on computer tapes, along with the 1977 results. This procedure also ensured uniformity in scoring and permitted comparisons, item by item, for the achievement questions in the five achievement tests. It also permitted age comparisons.

A summary of the main features of the data collected follows:

1. Identical tests were used in 1956 and in 1977.

2. All of the Grade III students in a large school district were tested. The study did not rely on samples.

3. The numbers of students were large: approximately 3500 in 1956 and 4500 in 1977.

4. The tests used were standardized tests of basic skills in reading, arithmetic, and language.

5. The procedures used in administering the tests were as close to being identical as they could be made.

6. Teachers, supervisors, and experts were invited to identify test items which they deemed inappropriate. Seventeen items involving 18 scores out of a possible 285 were so identified, 12 out of 80 in arithmetic, 6 out of 165 in reading, and none in language.

7. Students did all of the tests, including the items identified as inappropriate.

8. The 1956 tests were rescored, using the same persons and procedures as were used for scoring the 1977 tests.

9. Ages of the students were available for both years.

10. Item by item results for each student for each test were recorded on computer tape.

Findings

The average score on the Gates Word Recognition Test, after eliminating 4 items deemed inappropriate, made by 3540 Grade III students in 1956 was 35.35. The corresponding score made by 4430 Grade III students in 1977 was 37.41, an increase of 2.06 scores

or 6%. The average score on the Gates Paragraph Reading test, after eliminating one item (with two scores) which was deemed inappropriate, made by 3569 Edmonton Grade III students in 1956 was 22.27. The corresponding score made by 4430 students in 1977 was 22.66, an increase of 0.39 or 2%. The average score on the California Achievement Test (Reading) made by 3576 Edmonton Grade III students in 1956 was 75.26. The corresponding score made by 4417 Grade III students in 1977 was 77.58, an increase of 2.32 or 3%. No items were eliminated from the California Achievement Test (Reading). The average score on the California Achievement Test (Arithmetic), after eliminating 12 items deemed inappropriate, made by 3577 Edmonton Grade III students in 1956 was 55.98. The corresponding score made by 4367 Grade III students in 1977 was 55.56, a decrease of 0.42 or 1%. The average score on the California Achievement Test (Language) made by 3564 Edmonton Grade III students in 1956 was 24.24. The corresponding score made by 4391 Grade III students in 1977 was 25.41, an increase of 1.17 or 5%. (Spelling accounted for the increase.)

The average score on the California Mental Maturity test (a test of general scholastic ability) made by 3443 Edmonton Grade III students in 1956 was 76.09. The corresponding score made by 4378 Grade III students in 1977 was 80.12, an increase of 4.03 or 5%.

The Edmonton Grade III students in 1977 were younger than their counterparts in 1956. Boys averaged 1.96 months younger, girls averaged 1.57 months younger, and in total, the 1977 Edmonton Grade III students averaged 1.72 months younger.

A summary of the main findings of the study follows:

1. In three different tests of reading, with a total score of 159 after eliminating 6 items deemed inappropriate, the Edmonton Grade III students in 1977 performed better than did their counterparts in 1956.

2. In arithmetic, the Edmonton Grade III students in 1977 did not achieve as well as did their counterparts in 1956.

3. In language, the Edmonton Grade III students in 1977 performed better than did their counterparts in 1956 with spelling accounting for the increase in scores achieved.

4. In general scholastic ability, the Edmonton Grade III students in 1977 scored higher than their counterparts in 1956.

5. The Edmonton Grade III students when tested in 1977 were younger than were their counterparts in 1956.

Discussion

There are many factors involved in a comparative study of achievement spanning 21 years. A partial list would include:

television, travel, cultural opportunities, age of school entrance, average age of students, kindergarten and nursery school provisions, school promotion policies, the school time devoted to various subjects, class size, nature of class: graded, split grades, etc., teacher qualifications, system policies, textbooks (or references), library facilities, parental attitudes, and the like. The reader can speculate on how these and other factors might affect achievement as measured.

It is most important to bear in mind that reading, arithmetic, and language were measured, in this study, by the items in the tests used. If these items did not fairly and properly measure these subjects either in 1956 or 1977 or both, the results were, to that extent, biased or impaired. However, the small number of items identified as inappropriate by teachers, supervisors, and experts provides considerable assurance that the test items for most of the tests were considered to be reasonably fair.

Those who have asserted that the students of 1977 were not as well grounded in the basics as were their predecessors, are not supported in this contention by the evidence of this study for reading and language at the Grade III level. Their assertions may be more valid with respect to comparative achievement in arithmetic.

Both teachers and experts identified a proportionately large number of items (12 out of 80) deemed inappropriate to measure achievement in arithmetic in 1977. A small change in curriculum can cause students to perform poorly on certain items. For example, if Roman numerals are not taught in the schools, a test item asking what number corresponds to Roman XIX will be failed by most, and will so reduce the test scores. Arithmetic is "curriculum bound" in this way. In one school the principal decided not to have the students do the arithmetic part of the study because the test was not appropriate to the curriculum. In another school, one teacher took the same position. Evidently there was concern about this matter. When comparisons are made over long spans of years in arithmetic, particular care must be taken to compare on only those aspects in which the curricula are identical.

The overall results of the Edmonton Grade III Achievement: 1956-1977 Comparisons study show that the schools today are doing a commendable job in relation to their predecessors in developing student achievement. The recurrent need for this kind of public information is great. The present study provides understandable and specific answers to basic questions about school achievement. So that such information can be available in the future, enough tests were reprinted to permit another replication about the turn of the century.

A summary of the discussion of the findings follows:

1. Many factors influence school achievement. Some of these factors undoubtedly change over the years. The study was not designed to assess these factors, so the reader must speculate about their relative effects.

2. Achievement in reading, arithmetic, and language were defined for this study by the scores students made on the test items used.

3. The study provides solid evidence that Edmonton Grade III students in 1977, despite being younger than their counterparts in 1956, out-performed them in reading.

4. The study indicates that the Edmonton Grade III students in 1977, even though they were younger, were better in language, particularly spelling, than were their counterparts in 1956.

5. The study indicates that the Edmonton Grade III students in 1977 did not do as well on the items used to measure achievement in arithmetic as did their predecessors in 1956. Arithmetic is more "curriculum bound" than are reading or language.

6. Despite being younger, Edmonton Grade III students in 1977 scored higher on a test of general scholastic ability than did their predecessors in 1956.

7. Taking all factors into account, the study shows that the Edmonton Public School system is doing a good job at the Grade III level in comparison with 1956 in developing student achievement in basic skills.

CHAPTER II

PROCEDURES AND MAJOR FINDINGS

In order to acquaint all school personnel with the general nature of the study, by courtesy of the Edmonton Public School Board the material in Appendix 1 was attached to the STAFF BULLETIN of April 4, 1977. This publication had a very wide distribution in the school system. The record of further communications is as follows: Appendix 2 is a copy of more detailed information sent to principals of schools with Grade III students, and to teachers of Grade III students. Appendix 3 reproduces an accompanying letter to teachers dated April 18, 1977 and Appendix 4 a corresponding letter to principals. The enclosed information sheet mentioned in these letters is reproduced in Appendix 2. Still more detailed information was sent with the test packages as shown in Appendices 5, 6, 7, 8, and 9. Each of these is related to one of the four samples (groups 1, 2, 3, and 4) or to the remainder of the schools (group 5). Appendix 10 sets forth the list of participating schools. Appendix 11 reproduces a letter of appreciation sent to all teachers on June 20, 1977. Appendix 12 is a copy of the corresponding letter to principals. Appendix 13 is a copy of a letter of explanation and apology sent to all schools dated December 15, 1977. Appendices 14, 15, 16, and 17 (not numbered) are copies of the Gates Word Recognition Test, the Gates Paragraph Reading Test, the California Achievement Tests, and the California Test of Mental Maturity. Because the Raven Progressive Matrices is still in print, it is not included in the Appendices. In addition, each school which participated was sent a copy of the General Report by the Department of Education about the middle of January, 1978.

As indicated in the Foreword, the test manuals are available in the Test Library of the Department of Educational Psychology, The University of Alberta.

A general note about all of the tests is made here. The time limits in the test manuals were provided to the teachers (and principals) who administered the tests, along with other testing instructions. However, for each test, the Manuals emphasize that "this is not a speed test", i.e. speed of performance was not an important factor. An examination of the test results bore out this contention.

The major findings have been set forth in the General Report and in Chapter I Overview and Summary. This chapter is identical in both reports. For the convenience of the reader, the tables setting forth the major findings are included here. Table 1 presents the items deemed inappropriate by teachers, supervisors, and experts. Table 2 sets forth the major comparisons between the 1956 and 1977 results after eliminating inappropriate items. Table 3 shows the same comparisons when all items were included. The reader will note that for tests from which no items were eliminated, Tables 2 and 3 present identical data.

TABLE 1

DIFFICULTY AND DISCRIMINATION INDEXES OF ITEMS DEEMED INAPPROPRIATE FOR TESTS IN 1977

Legend: Diff. - proportion of students who responded correctly to an item.
Disc. - point biserial correlation between item response and total score on all other items in the test.

Test and Item	1956		1977	
	Diff.	Disc.	Diff.	Disc.
Gates Word Recognition				
1. Item 24 - veil	0.707	0.367	0.649	0.302
2. Item 42 - arbor	0 432	0.331	0.419	0.303
3. Item 44 - dormitory	0.564	0.345	0.650	0.317
4. Item 47 - pugilist	0.232	0.104	0.259	0.041
Gates Paragraph Reading				
1. Item 31 - temperature	0.144	0.244	0.200	0.349
2. Item 31 (2nd part) "	0.214	0.363	0.288	0.327
C.A.T. Arithmetic				
1. Test 3 Sec C 8 Roman III	0.888	0.370	0.720	0.326
2. Test 3 Sec C 9 Roman VI	0.660	0.379	0.288	0.342
3. Test 3 Sec C 10 Roman XX	0.684	0.395	0.315	0.363
4. Test 3 Sec D 10 "lb" means	0.804	0.373	0.822	0.427
5. Test 3 Sec E 3 Part 2 "write how"	0.816	0.355	0.830	0.315
6. Test 3 Sec E 4 Part 2 "write how"	0.725	0.319	0.624	0.370
7. Test 3 Sec E 5 Part 2 "write how"	0.861	0.315	0.843	0.340
8. Test 4 Sec I 4 add 4 digits	0.863	0.219	0.738	0.341
9. Test 4 Sec I 7 subtract 5 digits	0.518	0.362	0.371	0.396
10. Test 4 Sec I 8 mult. 2 x 3 digits	0.019	0.105	0.028	0.133
11. Test 4 Sec I 9 divide $4\overline{)16}$	0.554	0.290	0.562	0.352
12. Test 4 Sec I 10 divide $35\overline{)3850}$	0.090	0.196	0.018	0.126

TABLE 2

COMPARISONS OF SCORES, 1956-1977
ITEMS REMAINING AFTER ELIMINATING ITEMS DEEMED INAPPROPRIATE

TEST	1956 Data		1977 Data		Increase in Scores (1977 scores minus 1956 scores)	Percent Increase in Mean Scores
	Number Students	Mean S.D.	Number Students	Mean S.D.		
1. Gates Advanced Primary Reading Tests WORD RECOGNITION Copyright 1942	3540	35.35 5.57	4430	37.41 4.31	2.06	6%
2. Gates Advanced Primary Reading Tests PARAGRAPH READING Copyright 1942	3569	22.27 4.14	4430	22.66 4.03	0.39	2%
TOTAL GATES READING 1 + 2		57.62		60.07	2.45	4%
3. California Achievement Tests Form CC READING Copyright 1950	3576	75.26 6.97	4417	77.58 5.93	2.32	3%
4. California Achievement Tests Form CC ARITHMETIC Copyright 1950	3577	55.98 5.97	4367	55.56 7.58	-0.42	-1%
5. California Achievement Tests Form CC LANGUAGE Copyright 1950	3564	24.24 5.35	4391	25.41 5.17	1.17	5%
TOTAL ACHIEVEMENT 3 + 4 + 5		155.48		158.55	3.07	2%
6. California Short Form Test of Mental Maturity Copyright 1953	3443	76.09 6.14	4378	80.12 6.82	4.03	5%

TABLE 3

COMPARISON OF SCORES, 1956-1977, ALL ITEMS INCLUDED

TEST	1956 Data		1977 Data		Increase in Scores (1977 scores minus 1956 scores)	Percent Increase in Mean Scores
	Number Students	Mean S.D.	Number Students	Mean S.D.		
1. Gates Advanced Primary Reading Tests WORD RECOGNITION Copyright 1942	3540	37.28 6.19	4430	39.38 4.87	2.10	6%
2. Gates Advanced Primary Reading Tests PARAGRAPH READING Copyright 1942	3569	22.63 4.37	4430	23.15 4.36	0.52	2%
TOTAL GATES READING 1 + 2		59.91		62.53	2.62	4%
3. California Achievement Tests Form CC READING Copyright 1950	3576	75.26	4417	77.58	2.32	3%
4. California Achievement Tests Form CC ARITHMETIC Copyright 1950	3577	63.44 7.60	4367	61.72 9.29	-1.72	-3%
5. California Achievement Tests Form CC LANGUAGE Copyright 1950	3564	24.24 5.35	4391	25.41 5.17	1.17	5%
TOTAL ACHIEVEMENT 3 + 4 + 5		162.94		164.71	1.77	1%
6. California Short Form Test of Mental Maturity Copyright 1953	3443	76.09 6.14	4378	80.12 6.82	4.03	5%

CHAPTER III

AGE OF STUDENTS

In any comparison of student achievement over a span of time, average age must be taken into account. Policies with respect to school entrance, and with respect to promotions, have considerable effect on the average age of students in any grade. Such policies may change over a period of 21 years. The General Report includes a discussion of policy about school entrance.

Table 4 presents the basic data on average age of students.

	Year 1956			Year 1977			
Sex	Number	Mean Age In Months	S.D.	Number	Mean Age In Months	S.D.	1977 Younger (Months)
Male	1965	108.83	7.77	2390	106.87	5.82	1.96
Female	1878	107.32	7.05	2330	105.85	5.53	1.57
Total	3843	108.09	7.37	4720	106.37	5.59	1.72

It is shown above that the Grade III students in 1977 averaged 1.72 months younger, with males averaging more than that (nearly 2 months) and females averaging just over a month and a half younger. It is generally accepted that because of maturational factors, at this grade level, older average age would be associated with higher achievement.

Table 5 shows the comparative distributions of age, by year (1956 and 1977) and sex. Age is given in months. Both these tabular data, and Figures 1 and 2 reveal that for each group of students, males were older than females, while the data of Table 5 and Figure 3 clearly show that the 1977 students were younger. All three figures clearly show a long tail to the right (older ages).

TABLE 5

DISTRIBUTION OF AGE, MALE, FEMALE, BOTH SEXES, 1956-1977

AGE MO.	YEAR 1956			YEAR 1977		
	M	F	BOTH	M	F	BOTH
87	0	2	2			
88	0	0	0		1	1
89	1		1		0	0
90	0	0	0		0	0
91	1	0	1	2	0	2
92	1	3	4	1	2	3
93	0	0	0	0	1	1
94	2	0	2	3	2	5
95	5	3	8	2	1	3
96	36	53	89	0	6	6
97	4	6	10	4	4	8
98	5	7	12	31	47	78
99	35	57	92	111	152	263
100	62	60	122	127	142	269
101	79	92	171	130	148	278
102	100	109	209	157	138	295
103	108	104	212	151	166	317
104	121	131	252	171	169	340
105	109	126	235	181	164	345
106	129	148	277	153	199	352
107	129	119	248	173	169	342
108	109	110	219	190	175	365
109	132	139	271	192	163	355
110	128	145	273	129	144	274
111	97	62	159	61	48	109
112	78	75	153	45	54	99
113	62	55	117	36	22	58
114	45	36	81	28	30	58
115	53	40	93	27	18	45
116	50	29	79	29	22	51

TABLE 5 ccntinued

DISTRIBUTION OF AGE, MALE, FEMALE, BOTH SEXES, 1956-1977

AGE MO.	YEAR 1956			YEAR 1977		
	M	F	BOTH	M	F	BOTH
117	26	17	43	35	15	50
118	29	17	46	30	18	48
119	29	16	45	27	16	43
120	17	13	30	26	13	39
121	17	8	25	21	14	35
122	15	13	28	24	10	34
123	10	8	18	10	5	15
124	12	3	15	9	8	16
125	8	5	13	3	2	5
126	5	5	10	2	1	3
127	6	1	7	5	1	6
128	13	4	17	2	1	3
129	4	1	5	5	1	6
130	6	2	8	1	2	3
131	10	2	12	1	0	1
132	5	0	5	0	0	0
133	4	0	4	2	0	2
134	1	1	2	1	0	1
135	1	2	3	0	0	0
136	1	0	1	0	0	0
137	2	1	3	0	1	1
138	2	1	3	0	0	0
139	1	1	2	0	0	0
140	2	0	2	0	0	0
141	0	0	0	0	1	1
142	0	1	1	0	0	0
143	1	0	1	0	0	0
144	1	0	1	0	0	0
145	0	0	0	0	0	0
146	0	0	0	0	0	0

TABLE 5 continued

DISTRIBUTION OF AGE, MALE, FEMALE, BOTH SEXES, 1956-1977

AGE MO.	YEAR 1956			YEAR 1977		
	M	F	BOTH	M	F	BOTH
147	1	0	1	0	0	0
148	0	0	0	0	0	0
149	0	0	0	0	0	0
150	1	0	1	0	0	0
151	0	0	0	0	0	0
152	0	0	0	0	0	0
153	1	0	1	0	0	0
154	0	0	0	0	0	0
155	0	0	0	0	0	0
156	0	0	0	0	0	0
157	0	0	0	0	0	0
158	0	0	0	0	0	0
159	1	1	2	0	0	0
160	1	0	1	0	0	0
161	0	0	0	0	0	0
162	0	0	0	0	0	0
163	0	0	0	0	0	0
164	0	0	0	0	0	0
165	0	0	0	0	0	0
166	1	1	2	0	0	0

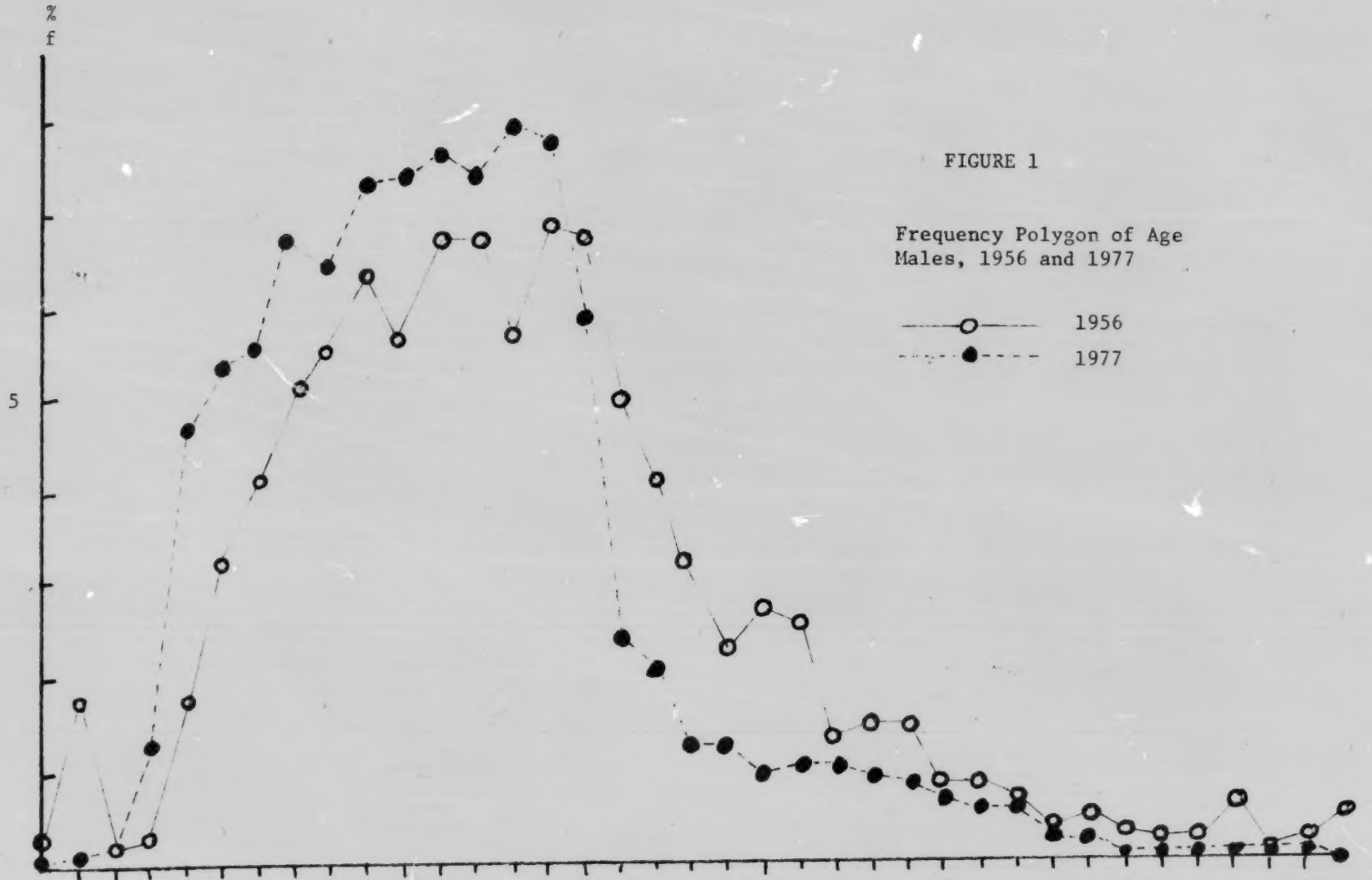


FIGURE 1

Frequency Polygon of Age
Males, 1956 and 1977

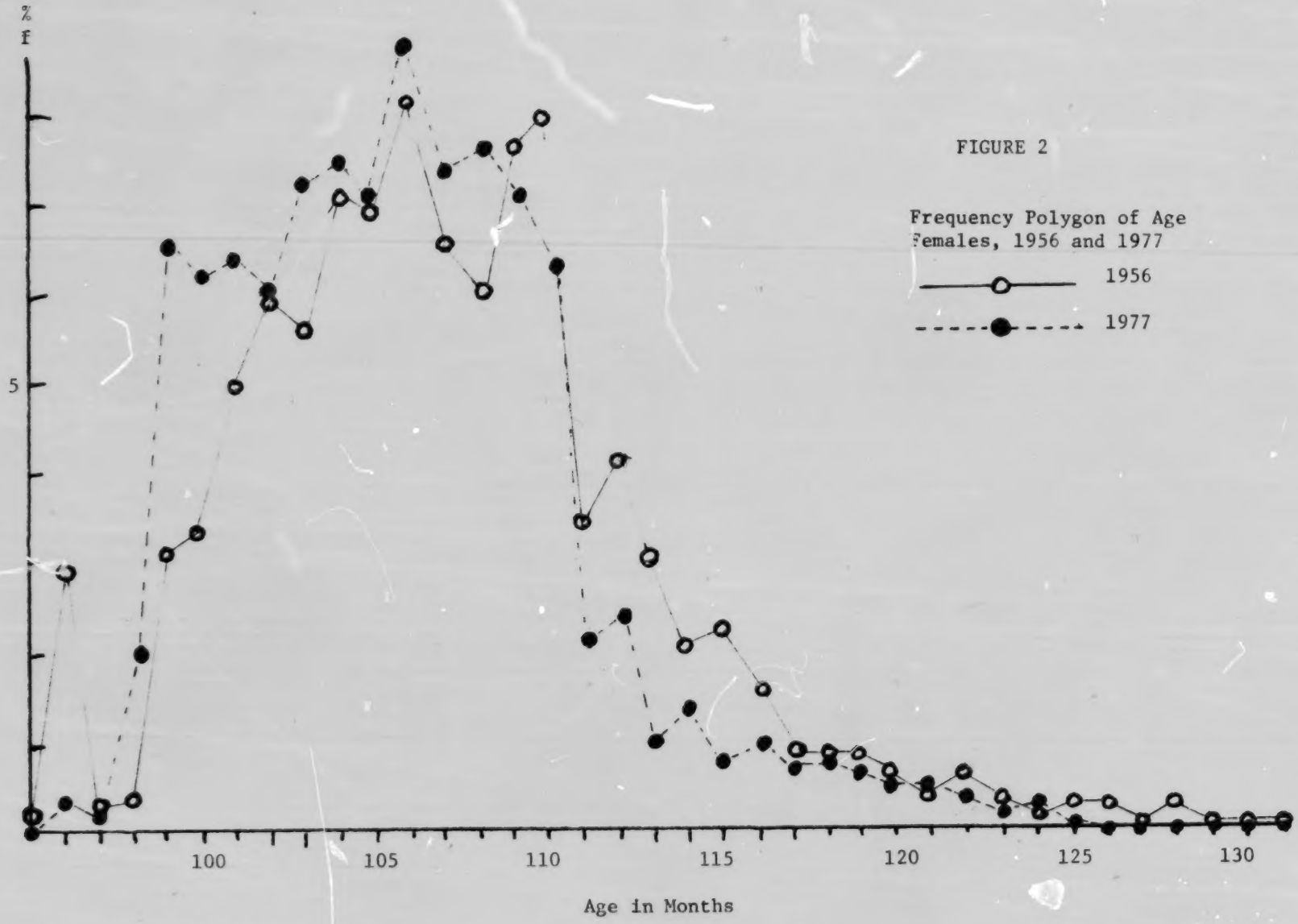


FIGURE 2

Frequency Polygon of Age
Females, 1956 and 1977

1956

1977

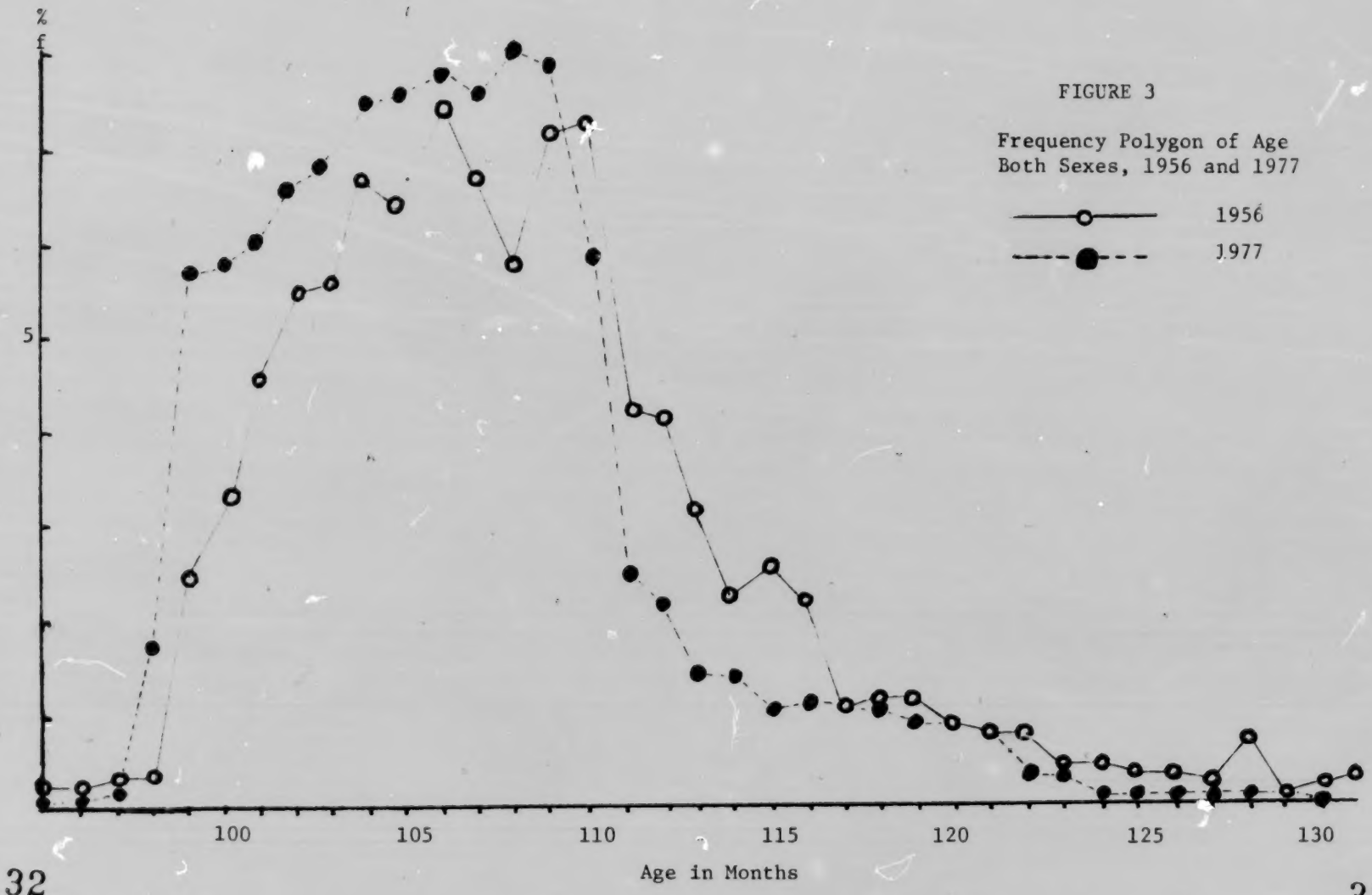


FIGURE 3

Frequency Polygon of Age
Both Sexes, 1956 and 1977

CHAPTER IV

CORE SCHOOL COMPARISONS

There were 45 schools which participated in the study both in 1956 and 1977. There were 12 schools which took part in only the 1956 project because they were closed by 1977 and 70 schools which participated in only that of 1977.

The 45 schools common to the 1956 and 1977 testings were as follows, listed alphabetically.

Alex Taylor	H. A. Gray	Oliver
Allendale	Hazeldean	Parkallen
Belgravia	Holyrood	Parkdale
Bellevue	Idlewylde	Prince Charles
Braemar	Inglewood	Prince Rupert
Calder	King Edward	Queen Alexandra
Coronation	Lauderdale	Queen Mary Park
Crestwood	McDougall	Riverdale
Cromdale	McKernan	Rutherford
Delton	Mill Creek	Sherbrooke
Eastwood	Montrose	Spruce Avenue
Forest Heights	Mount Pleasant	Strathearn
Garneau	Mount Royal	Virginia Park
Glenora	North Edmonton	Windsor Park
Grovenor	Norwood	Woodcroft

The Grade III enrollment in these schools declined over the 21 years to about 35% of the 1956 figures, as is shown in Table 6 in terms of numbers of Grade III students who wrote the various tests. This table also reveals that in every test except arithmetic, the Grade III students in 1977 outperformed those of 1956, on the average.

In the 21 years between the 1956 and 1977 studies, the city had grown from a population of 226,000 to that of 471,000. The population of Grade III students tested varied from test to test, but was somewhat less than 3,800 in 1956 and 4,700 in 1977. These were the approximate numbers for whom ages were recorded. An inspection of enrollment shows many schools which had three rooms of Grade III students in 1956 had only one room in 1977. The reader can speculate on general changes such as ageing of the population, migration within the city, change in the nature of districts, etc. In general, these schools in 1956 were either central (although the 12 which no longer had Grade III students in 1977 were more certainly in this category) or suburban schools. By 1977 few of the 45 schools would be considered suburban, although some would. The nature of the changes from 1956 to 1977 will not be characterized further.

TABLE 6

COMPARISONS OF SCORES, 45 CORE SCHOOLS 1956, 1977 AND 70 SUBURBAN SCHOOLS 1977 AFTER ELIMINATING INAPPROPRIATE ITEMS

	1956 45 Core Schools		1977 45 Core Schools		1977 70 Suburban Schools	
Test	No.	Mean	No.	Mean	No.	Mean
GWR	3182	35.19	1167	37.12	3293	37.17
GPR	3209	22.18	1168	22.47	3262	22.73
CAT-R	3157	74.66	1143	77.38	3274	77.65
CAT-A	3064	56.01	1145	55.18	3222	55.69
CAT-L	3057	24.24	1130	25.37	3261	25.42
CMM	3097	76.10	1165	79.71	3213	80.27

Table 6 sets forth the basic comparisons 1956-1977 for the 45 core schools. Contrary to expectations, the scores increased over the 21 years despite the anticipated change in the composition of the student body.

Table 6 also compares the scores made by Grade III students in 1977 in the 45 core schools with those made by students in 1977 in the remaining 70 suburban schools. As can be seen, the differences were small, and all in favour of the suburban schools.

An examination of the results for individual schools reveals the expected pattern. In some schools, the scores in 1956 were considerably higher than in 1977. In 1977, these schools were in districts which one could describe as having become "inner city". In most of the 45 schools, the 1977 scores were consistently higher than those in 1956. Finally, average scores in the 45 core schools in 1977 were not quite as high as those in the remaining suburban schools.

CHAPTER V

GATES WORD RECOGNITION TEST

The test used originally in 1956 and therefore reprinted and used in 1977 was copyright 1942 Arthur I. Gates under the title Gates Advanced Primary Reading Tests. Type 1 Word Recognition as shown in the appendix. There are no numbers on the items, so they were numbered in order, with "apple" being #1, "orange" #9, and so on. The manual describes the placement of these tests: Gates Reading Readiness Tests, Gates Primary Reading Tests, then the present test, then Gates Basic Reading Tests for Grades 4 - 8, etc. The manual states that this test was "designed for use at any time during Grade Three" and that the words in the Gates Word Recognition Test were taken from the Thorndike word list. It notes that toward the end of the test, the words come from the upper end of the Thorndike list, and observes that "it is a rare pupil who will get a perfect score in this test" and further, "such a pupil would have a reading vocabulary which would enable him to read practically all adult popular literature." The first contention is borne out by the experience of this study, as the distribution of scores in Table 7 shows. The manual states that the test is not a speed test, but was designed to measure "accuracy, range, and level of comprehension."

The manual has a table of Grade and Age Norms but does not provide any information on their derivation. It is of interest to note that the average score made by Edmonton Grade III students in 1956 corresponds on this table to Grade 4.3 (the end of the third month in Grade 4) while the average score made by the 1977 students corresponds to a grade placement of 4.6. The manual has a section Distribution and Reliability of Scores which reports that "Reliabilities were computed by the separate halves method for two classes given the test near the beginning of the third grade. The Spearman-Brown reliability coefficients . . . were 0.89 and 0.90." In the present study, for the 3540 students in 1956 the KR-20 reliability was 0.86, and the standard error of measurement was 2.30, while the corresponding figures for 4430 students in 1977 were 0.81 and 2.11.

Table 7 provides the distribution of scores by year and sex. In reading, the conventional wisdom holds that females exceed males in achievement at this grade level. In the year 1956 the mean score on the Gates Word Recognition test for 1804 males was 36.90, and for 1736 females was 37.68. The females excelled by 0.78 of a score. In the year 1977 the mean score for 2243 males was 39.17 and for 2187 females 39.61. The females excelled by 0.44 of a score. In the year 1977 the mean score for males exceeded that of the males

in 1956 by 2.27. The corresponding figure for females was 1.96. If one wished to hypothesize, these data could be accounted for by the hypothesis that males in 1956 did not fare well in word recognition! The distributions of scores for males and females both in 1956 and in 1977 were similar, as shown respectively in Figures 4 and 5. Figure 6, which compares both sexes in 1956 and 1977, clearly shows the higher mean scores of the 1977 students were largely earned by fewer students making lower scores (30 or less) and fewer students making high scores (40-45) in 1956. On these figures, the vertical axis presents frequency in percent.

Table 7 presents the frequency distributions by year and sex for Gates Word Recognition, and provides the data depicted in Figures 4, 5, and 6.

Tables 8, 9, and 10 provide item analyses. The difficulty shown is the proportion of students who scored on the item, eg., Table 8 shows that 634 out of 1000 male students in 1956 marked the correct answer to item 24 (veil). The discrimination is the corrected point biserial, or the correlation between scores on this item and on all other items. For #24, the discrimination was 0.350. Items for which the difference in difficulty was 0.050 (50 out of 1000) in favour of the 1977 students are marked with a single asterisk. As shown in Table 8, item 20, in 1956 there were 760 out of 1000 males who scored correctly, while in 1977 there were 883 out of 1000. It is interesting to note that males and females show very nearly the same differences over the span of 21 years. Exceptions are item 27 (razor), item 30 (study), item 35 (musician) and item 37 (dwelling) where the difference of 0.050 in difficulty was found for either males or females but not for all subjects.

The opposite finding that the 1956 students performed better (marked **), was found on item 24 (veil) for each sex, while the 1956 females scored better on items 39 (slumber) and item 48 (rhythmic) than did their 1977 counterparts. It might be speculated that "veil" has become a much less familiar object. A detailed perusal of the shifts in difficulty will reveal many interesting comparisons.

Items deemed inappropriate for comparisons are marked †.

TABLE 7

GATES WORD RECOGNITION DISTRIBUTION OF SCORES

SCORE	YEAR 1976			YEAR 1977		
	M	F	BOTH	M	F	BOTH
9	0	0	0	1	0	1
10	0	0	0	0	0	0
11	1	0	1	0	0	0
12	3	0	3	0	0	0
13	1	0	1	2	2	4
14	0	2	2	0	0	0
15	2	0	2	0	2	2
16	2	1	3	0	1	1
17	3	2	5	2	0	2
18	4	3	7	0	1	1
19	1	2	3	2	1	3
20	6	10	16	0	1	1
21	6	5	11	3	3	6
22	18	4	22	1	1	2
23	10	10	20	10	6	16
24	20	13	33	3	7	10
25	21	11	32	6	9	15
26	31	27	58	13	5	18
27	45	17	62	14	10	24
28	43	34	77	20	14	34
29	45	38	83	30	14	44
30	54	45	99	24	30	54
31	51	38	89	38	34	72
32	51	52	103	66	38	104
33	79	70	149	48	47	95
34	75	81	156	80	72	152
35	85	84	169	86	68	154
36	98	100	198	111	107	218

TABLE 7 continued

GATES WORD RECOGNITION DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
SCORE	M	F	BOTH	M	F	BOTH
37	95	93	188	135	113	248
38	117	101	218	133	142	275
39	100	107	207	166	161	327
40	105	120	225	205	201	406
41	128	126	254	217	203	420
42	136	144	280	215	244	459
43	103	127	230	223	212	435
44	99	114	213	168	182	350
45	86	79	165	102	137	239
46	47	49	96	82	76	158
47	26	20	46	29	37	66
48	7	7	14	8	6	14

TABLE 8

Gates WORD RECOGNITION Item Analysis 1956-1977 MALE

Item & No.	YEAR 1956 N = 1804		YEAR 1977 N = 2243	
	Diffic.	Discrim.	Diffic.	Discrim.
1. apple	0.998	0.030	0.996	0.058
2. floor	0.987	0.012	0.988	0.035
3. bread	0.997	0.098	0.999	0.007
4. fire	0.997	0.086	0.999	0.080
5. woman	0.994	0.121	0.996	0.038
6. village	0.957	0.224	0.920	0.228
7. dinner	0.991	0.185	0.994	0.115
8. stamp	0.988	0.175	0.994	0.128
9. orange	0.983	0.123	0.996	0.104
10. lumber	0.970	0.277	0.983	0.267
11. string	0.937	0.277	0.984	0.199
12. knee	0.934	0.318	0.974	0.253
13. forest	0.966	0.204	0.979	0.197
14. sword	0.956	0.265	0.976	0.253
15. orchard	0.845	0.435	0.878	0.421
16. insect	0.943	0.342	0.982	0.266
17. grocer	0.934	0.367	0.909	0.404
18. hatchet	0.859	0.312	0.862	0.289
19. merchant	0.746	0.403	0.784	0.352
20.*anchor	0.760	0.355	0.883	0.291
21.*onion	0.849	0.410	0.942	0.345
22.*slipper	0.900	0.406	0.969	0.287
23. arrow	0.937	0.378	0.979	0.206
24**veil †	0.634	0.350	0.575	0.248
25.*stumble	0.758	0.507	0.818	0.360

TABLE 8 continued

Gates WORD RECOGNITION Item Analysis 1956-1977 MALE

Item & No.	YEAR 1956 N = 1804 Diffic.	YEAR 1956 N = 1804 Discrim.	YEAR 1977 N = 2243 Diffic.	YEAR 1977 N = 2243 Discrim.
26.*chirp	0.809	0.414	0.934	0.342
27.*razor	0.819	0.432	0.881	0.340
28. mask	0.916	0.221	0.927	0.187
29.*shark	0.906	0.375	0.994	0.155
30.*study	0.896	0.449	0.973	0.322
31. fierce	0.811	0.498	0.848	0.407
32.*temple	0.814	0.439	0.898	0.368
33.*military	0.715	0.381	0.784	0.398
34.*gypsy	0.442	0.422	0.611	0.393
35.*musician	0.782	0.348	0.860	0.360
36.*wrestle	0.785	0.478	0.901	0.440
37.*dwelling	0.534	0.341	0.617	0.159
38.*weapon	0.785	0.499	0.870	0.390
39. slumber	0.527	0.389	0.502	0.312
40.*admiral	0.426	0.382	0.619	0.397
41.*medal	0.523	0.368	0.621	0.367
42. arbor †	0.433	0.355	0.421	0.307
43. garrison	0.284	0.284	0.248	0.195
44.*dormitory †	0.548	0.363	0.631	0.345
45.*chandelier	0.461	0.363	0.806	0.404
46. equestrian	0.325	0.186	0.328	0.144
47. pugilist †	0.207	0.086	0.240	0.048
48. rhythmic	0.329	0.236	0.290	0.142

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more
† Items deemed inappropriate for comparison

TABLE 9

Gates WORD RECOGNITION Item Analysis 1956-1977 FEMALE

Item & No.	YEAR 1956 N = 1736		YEAR 1977 N = 2187	
	Diffic.	Discrim.	Diffic.	Discrim.
1. apple	0.999	-0.009	0.997	0.119
2. floor	0.993	0.025	0.986	0.125
3. bread	0.999	0.119	0.996	0.073
4. fire	0.998	0.079	0.996	0.112
5. woman	0.997	0.024	0.996	0.060
6. village	0.949	0.146	0.916	0.247
7. dinner	0.994	0.127	0.995	0.070
8. stamp	0.991	0.124	0.989	0.129
9. orange	0.993	0.138	0.994	0.108
10. lumber	0.972	0.305	0.969	0.313
11. string	0.952	0.301	0.983	0.276
12. knee	0.954	0.289	0.978	0.164
13. forest	0.982	0.190	0.982	0.177
14. sword	0.950	0.332	0.967	0.345
15. orchard	0.876	0.400	0.898	0.418
16. insect	0.968	0.301	0.982	0.300
17. grocer	0.970	0.229	0.933	0.385
18. hatchet	0.831	0.335	0.837	0.307
19. merchant	0.792	0.368	0.797	0.353
20.*anchor	0.620	0.418	0.868	0.354
21.*onion	0.903	0.373	0.968	0.271
22. slipper	0.951	0.354	0.982	0.274
23. arrow	0.956	0.333	0.978	0.276
24**veil †	0.784	0.382	0.724	0.363
25.*stumble	0.826	0.486	0.848	0.331

TABLE 9 continued

Gates WORD RECOGNITION Item Analysis 1956-1977 FEMALE

Item & No.	YEAR 1956 N = 1736		YEAR 1977 N = 2187	
	Diffic.	Discrim.	Diffic.	Discrim.
26.*chirp	0.825	0.402	0.937	0.368
27. razor	0.840	0.418	0.886	0.364
28. mask	0.926	0.155	0.947	0.135
29.*shark	0.824	0.432	0.988	0.191
30. study	0.939	0.377	0.981	0.292
31. fierce	0.849	0.482	0.845	0.440
32.*temple	0.861	0.391	0.924	0.322
33.*military	0.759	0.368	0.840	0.361
34.*gypsy	0.557	0.432	0.717	0.404
35. musician	0.829	0.288	0.877	0.328
36.*wrestle	0.795	0.478	0.910	0.393
37. dwelling	0.567	0.275	0.578	0.100
38.*weapon	0.735	0.479	0.840	0.398
39**slumber	0.552	0.360	0.482	0.324
40.*admiral	0.342	0.309	0.475	0.323
41.*medal	0.529	0.368	0.654	0.356
42. arbor †	0.431	0.306	0.417	0.300
43. garrison	0.262	0.292	0.262	0.215
44.*dormitory †	0.581	0.324	0.668	0.285
45.*chandelier	0.490	0.295	0.833	0.361
46. equestrian	0.324	0.173	0.353	0.118
47. pugilist †	0.257	0.118	0.278	0.031
48.**rhythmic	0.408	0.270	0.354	0.176

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more
† Items deemed inappropriate for comparison

TABLE 10

Gates WORD RECOGNITION Item Analysis 1956-1977
BOTH SEXES

No. & Item	YEAR 1956 N = 3540		YEAR 1977 N = 4430	
	Diffic.	Discrim.	Diffic.	Discrim.
1. apple	0.999	0.019	0.997	0.087
2. floor	0.990	0.019	0.987	0.080
3. bread	0.998	0.015	0.998	0.046
4. fire	0.997	0.083	0.998	0.094
5. woman	0.996	0.084	0.996	0.049
6. village	0.953	0.183	0.918	0.236
7. dinner	0.992	0.161	0.994	0.095
8. stamp	0.990	0.153	0.992	0.126
9. orange	0.988	0.129	0.995	0.105
10. lumber	0.971	0.290	0.976	0.286
11. string	0.945	0.289	0.984	0.236
12. knee	0.944	0.307	0.976	0.212
13. forest	0.974	0.200	0.980	0.188
14. sword	0.953	0.295	0.972	0.298
15. orchard	0.860	0.421	0.888	0.820
16. insect	0.955	0.327	0.982	0.282
17. grocer	0.952	0.315	0.921	0.396
18. hatchet	0.845	0.319	0.850	0.295
19. merchant	0.768	0.389	0.791	0.353
20.*anchor	0.692	0.368	0.875	0.321
21.*onion	0.875	0.396	0.955	0.313
22.*slipper	0.925	0.386	0.975	0.281
23. arrow	0.946	0.360	0.979	0.240
24**veil †	0.707	0.367	0.649	0.302
25. stumble	0.792	0.500	0.833	0.348

TABLE 10 continued

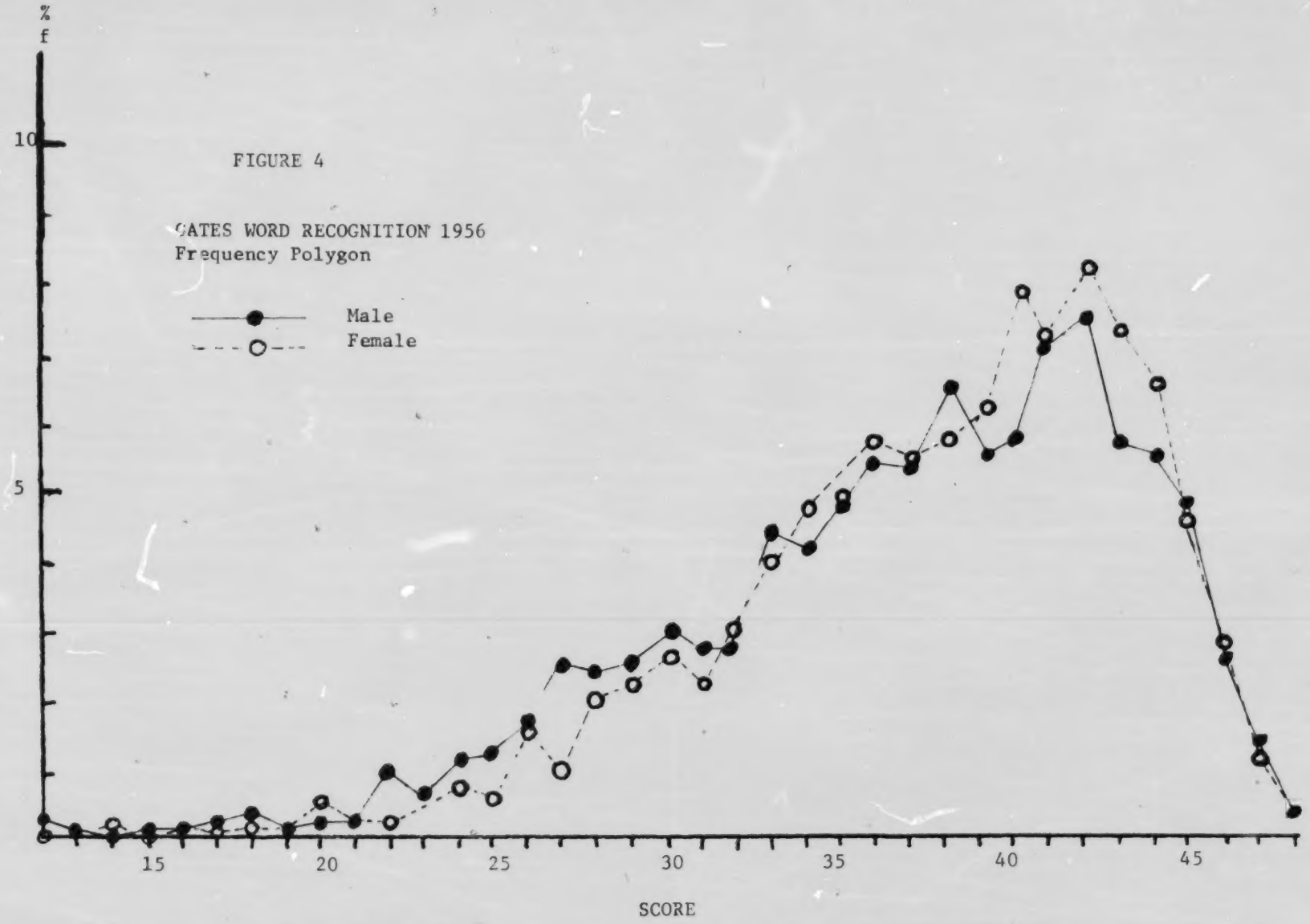
Gates WORD RECOGNITION Item Analysis 1956-1977
BOTH SEXES

	YEAR 1956 N = 3540		YEAR 1977 N = 4430	
No. & Item	Diffic.	Discrim.	Diffic.	Discrim.
26.*chirp	0.817	0.409	0.936	0.355
27. razor	0.829	0.426	0.884	0.352
28. mask	0.921	0.192	0.937	0.165
29.*shark	0.866	0.387	0.991	0.171
30.*study	0.917	0.421	0.977	0.307
31. fierce	0.829	0.492	0.847	0.422
32.*temple	0.837	0.420	0.911	0.348
33.*military	0.737	0.377	0.812	0.382
34.*gypsy	0.499	0.429	0.663	0.399
35.*musician	0.805	0.323	0.869	0.345
36.*wrestle	0.790	0.478	0.906	0.418
37. dwelling	0.550	0.311	0.598	0.128
38.*weapon	0.760	0.482	0.856	0.391
39. slumber	0.539	0.376	0.492	0.316
40.*admiral	0.384	0.341	0.548	0.347
41.*medal	0.526	0.368	0.637	0.363
42. arbor †	0.432	0.331	0.419	0.303
43. garrison	0.273	0.285	0.255	0.205
44.*dormitory †	0.564	0.345	0.650	0.317
45.*chandelier	0.475	0.332	0.819	0.385
46. equestrian	0.325	0.180	0.340	0.132
47. pugilist †	0.232	0.104	0.259	0.041
48. rhythmic	0.368	0.255	0.321	0.161

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more
† Items deemed inappropriate for comparison

FIGURE 4

GATES WORD RECOGNITION 1956
Frequency Polygon



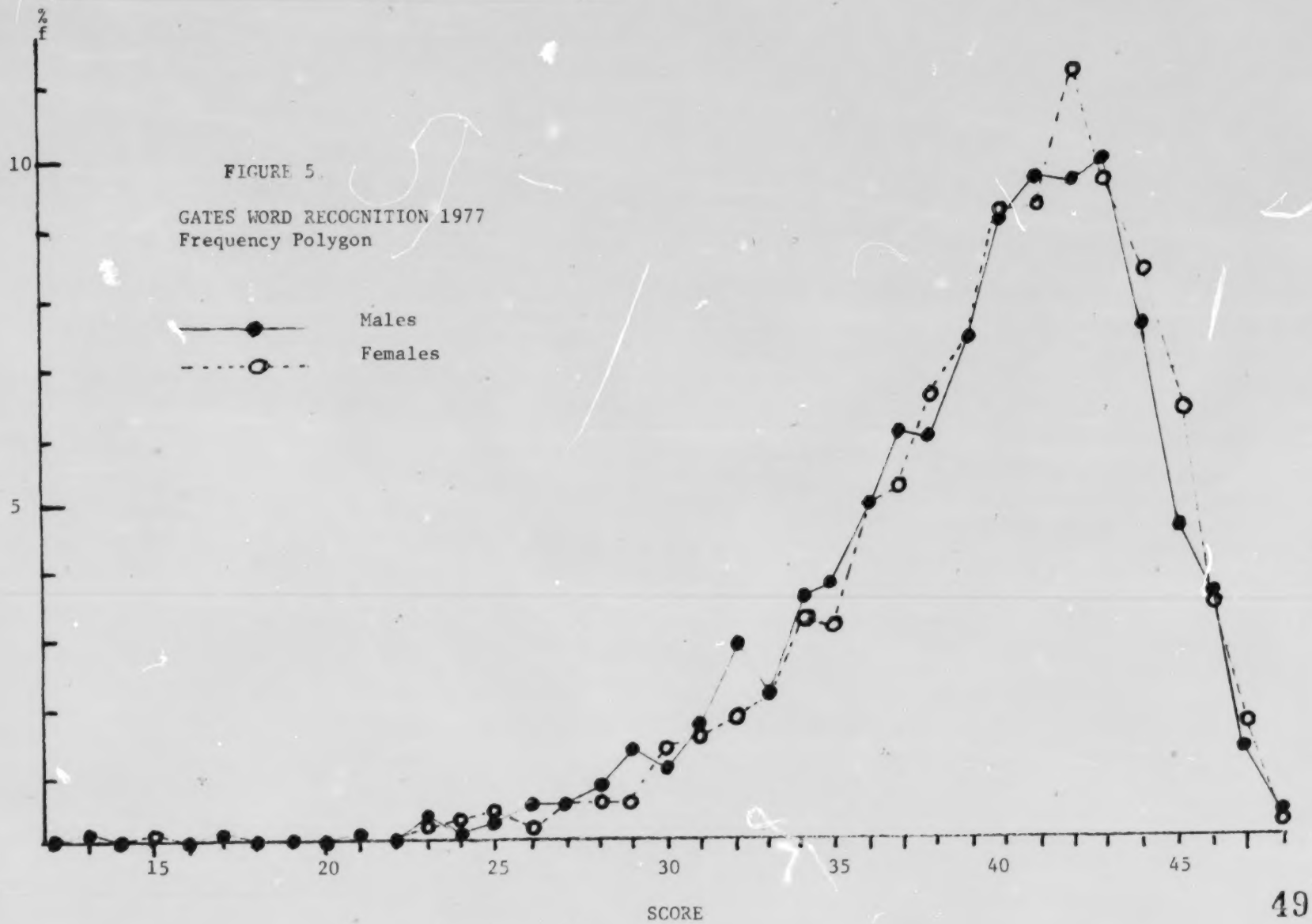


FIGURE 5

GATES WORD RECOGNITION 1977
Frequency Polygon

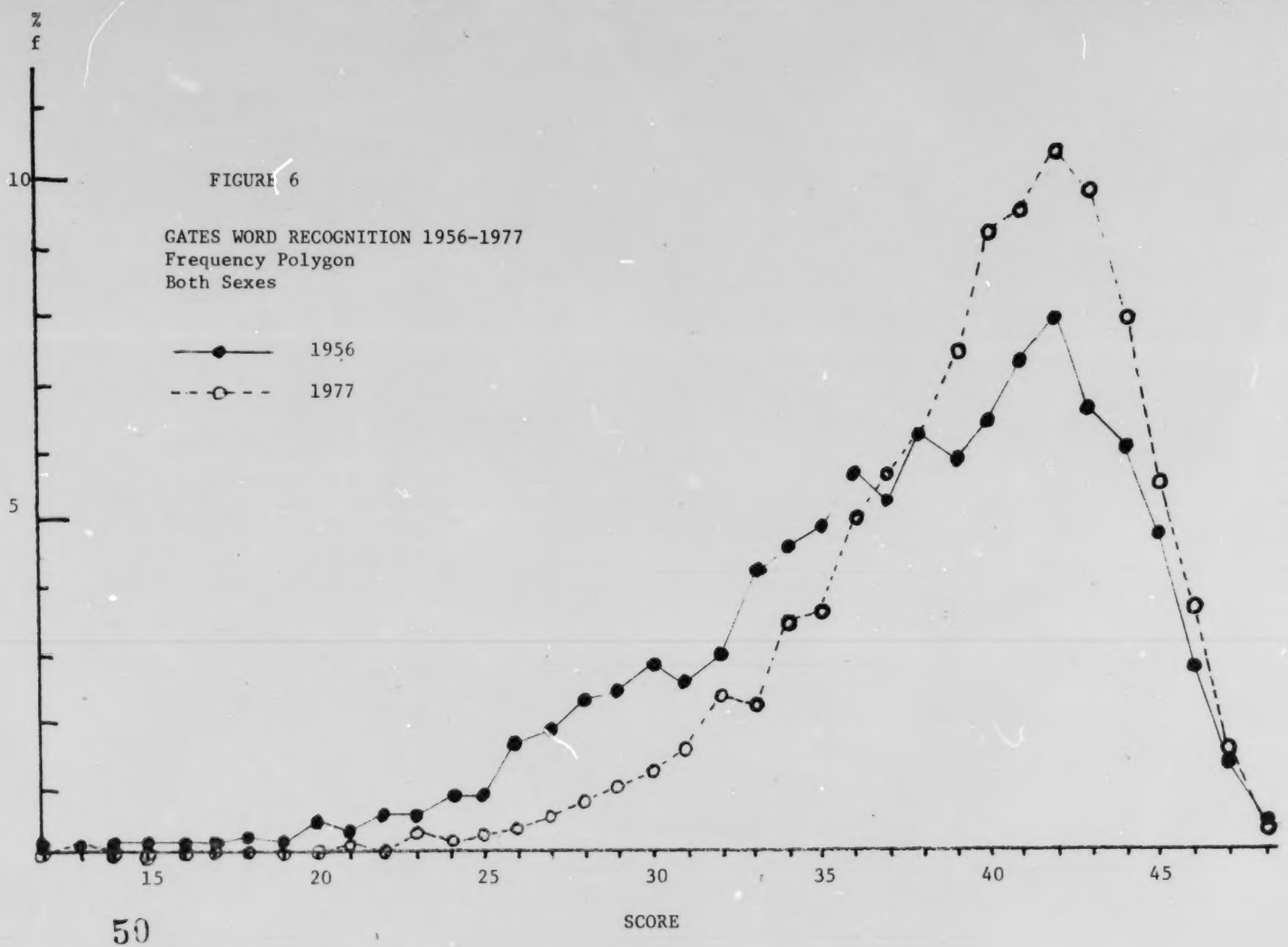


FIGURE 6

GATES WORD RECOGNITION 1956-1977
Frequency Polygon
Both Sexes

50

51

CHAPTER VI

GATES PARAGRAPH READING TEST

This test is a companion to the Gates Word Recognition Test described in Chapter V. There are numbers on the test items, as can be seen from the copy of the test in the appendix. It should be noted that up to and including item 16, each item involves one task and therefore a correct response earns a student one score. Starting with item 17, each item involves two tasks and two possible scores. In the numbering used in this study, the first task in item 17 is numbered 17 and the second task (place an X on what is opened to the public once a year) is numbered 18. The next item, numbered 18 on the test, with two tasks, is numbered 19 and 20 in this study. Finally, the last item, numbered 24 on the test, is numbers 31 and 32 in the study.

The manual states that the test requires the reading of paragraphs, and that "vocabulary, sentence structure, and length of passages of the test units increase gradually in complexity and difficulty." It states that the test "measures the pupil's ability to do independent reading of a rigorous sort." It also explains that in the first 21 items, words on the first 3000 in the Thorndike Word Book were used, but in the last three items, any word in the first 5000 was allowed. "It was necessary to make these paragraphs quite difficult in order really to test the best readers in the second and third grades."

The reliability given, based on the same two classes of students mentioned for the Gates Word Recognition Test in Chapter V, a Spearman-Brown split halves, was 0.86 and 0.88. In the present study, for the 1956 students the KR-20 reliability was 0.80 and the standard error of measurement was 1.94, while the corresponding figures for the 1977 students were 0.79 and 1.98.

The grade placement (see Chapter V) corresponding to the average score made by Edmonton Grade III students in 1956 was 4.2 and for the 1977 students was also 4.2.

Table II provides the distribution of scores by year and sex. In 1956 the mean score on the Gates Paragraph Reading Test for 1823 males was 22.20 and for 1746 females was 23.07. In 1977, the mean score for 2239 males was 22.68 and for 2191 females it was 23.61. The females excelled by 0.77 of a score in 1956, and by 0.93 in 1977. In each year, the standard deviation of scores was higher for males: 4.70 and 4.49 in 1956 and 1977 respectively, compared with 3.94 and 4.17 for females. Figures 7 and 8 reveal a tail to the left (lower scores) for males, indicating a higher proportion of "low scores", perhaps "non-readers." In the year 1977 the mean score for males exceeded that of the males in 1956 by 0.48. The corresponding figure for females was 0.64.

Tables 12, 13, and 14 present item analyses, with the difficulty and discrimination of each item. Chapter V provides an explanation of these terms, with illustrations. An examination of the items in which the difference in difficulty was 0.050 or more is revealing. Item #2 depicted a hen, a pig, and a nest with an egg. The instruction was "Draw a line from the hen to her egg." This item proved to be easier for the 1956 students of both sexes. A similar study of each item which exhibited sizeable time differences in difficulty raised interesting speculations about fans, aprons, pine leaves, etc.

The distribution of scores for males and females both in 1956 and in 1977 was similar, as is shown in Figures 7 and 8. For all subjects the 1956 distribution of scores is similar to that of 1977 as shown in Figure 9.

TABLE 11

GATES PARAGRAPH READING DISTRIBUTION OF SCORES

SCORE	YEAR 1956			YEAR 1977		
	M	F	BOTH	M	F	BOTH
2	0	0	0	1	0	1
3	0	0	0	3	0	3
4	2	0	2	0	0	0
5	1	0	1	0	1	1
6	2	0	2	1	1	2
7	3	2	5	1	0	1
8	2	0	2	4	1	5
9	4	1	5	5	1	6
10	9	6	15	3	5	8
11	16	5	21	9	4	13
12	24	8	32	13	8	21
13	26	10	36	18	14	32
14	32	21	53	24	10	34
15	54	27	81	44	22	66
16	47	23	70	61	51	112
17	70	44	114	89	59	148
18	80	68	148	111	73	184
19	100	90	190	144	97	241
20	121	104	225	158	136	294
21	145	142	287	157	155	312
22	147	157	304	185	180	365
23	162	181	343	189	196	385
24	157	171	328	219	209	428
25	156	163	319	185	218	403
26	128	183	311	150	175	325
27	111	129	240	146	167	313
28	82	106	188	106	145	251
29	69	58	127	88	104	192
30	47	34	81	64	89	153
31	23	10	33	43	51	94
32	3	3	6	18	19	37

TABLE 12
GATES PARAGRAPH READING ITEM ANALYSIS MALE

Item & No.	YEAR 1956 N = 1823		YEAR 1977 N = 2239	
	Diffic.	Discrim.	Diffic.	Discrim.
1. kitten	0.979	0.159	0.984	0.131
2**hen	0.988	0.156	0.937	0.123
3. barn	0.978	0.255	0.985	0.118
4. comb	0.974	0.096	0.964	0.140
5. tree	0.956	0.161	0.929	0.164
6. newspapers	0.964	0.153	0.958	0.166
7. napkin	0.804	0.411	0.847	0.285
8.*pine	0.437	0.244	0.642	0.186
9. church	0.982	0.161	0.991	0.165
10. shovel	0.947	0.265	0.942	0.272
11. bicycle	0.952	0.147	0.944	0.192
12. bear	0.947	0.254	0.952	0.270
13. horses	0.909	0.264	0.884	0.247
14. toy	0.919	0.371	0.917	0.287
15. soup	0.853	0.365	0.853	0.343
16.*corn	0.749	0.308	0.803	0.246
17. estate	0.564	0.383	0.576	0.348
18. "	0.880	0.258	0.904	0.160
19. fans	0.753	0.470	0.706	0.333
20. "	0.614	0.400	0.587	0.394
21.*senses	0.671	0.514	0.775	0.457
22.* "	0.709	0.483	0.780	0.416
23**apron	0.544	0.481	0.475	0.484

TABLE 12 continued
GATES PARAGRAPH READING ITEM ANALYSIS MALE

Item & No.	YEAR 1956 N = 1823		YEAR 1977 N = 2239	
	Diffic.	Discrim.	Diffic.	Discrim.
24. apron	0.699	0.380	0.665	0.310
25. road	0.471	0.313	0.496	0.330
26. "	0.349	0.279	0.363	0.333
27. trains	0.306	0.447	0.344	0.467
28.* "	0.257	0.373	0.326	0.368
29. flax	0.417	0.271	0.466	0.189
30. "	0.240	0.363	0.229	0.381
31.†temperature	0.151	0.276	0.189	0.358
32.† "	0.211	0.295	0.270	0.324

* More difficult for 1956 students by 0.050 or more
** More difficult for 1977 students by 0.050 or more
† Items deemed inappropriate for comparison

TABLE 13
GATES PARAGRAPH READING ITEM ANALYSIS FEMALE

Item & No.	YEAR 1956 N = 1746		YEAR 1977 N = 2191	
	Diffic.	Discrim.	Diffic.	Discrim.
1. kitten	0.992	0.098	0.989	0.120
2.**hen	0.991	0.120	0.916	0.101
3. barn	0.991	0.207	0.992	0.134
4. comb	0.978	0.118	0.976	0.141
5. tree	0.959	0.093	0.938	0.123
6. newspapers	0.978	0.198	0.951	0.172
7. napkin	0.860	0.310	0.874	0.297
8.*pine	0.474	0.170	0.650	0.201
9. church	0.990	0.149	0.992	0.063
10. shovel	0.959	0.213	0.969	0.211
11. bicycle	0.959	0.122	0.963	0.141
12. bear	0.952	0.240	0.959	0.187
13. horses	0.899	0.251	0.881	0.208
14. toy	0.954	0.263	0.946	0.242
15. soup	0.904	0.276	0.898	0.242
16. corn	0.796	0.263	0.831	0.233
17. estate	0.595	0.372	0.620	0.384
18. "	0.879	0.184	0.911	0.150
19.**fans	0.867	0.358	0.805	0.354
20. "	0.644	0.376	0.603	0.358
21. senses	0.798	0.468	0.838	0.413
22. "	0.785	0.454	0.827	0.360
23.*apron	0.725	0.431	0.637	0.440

TABLE 13 continued
GATES PARAGRAPH READING ITEM ANALYSIS FEMALE

Item & No.	YEAR 1956 N = 1746		YEAR 1977 N = 2191	
	Diffic.	Discrim.	Diffic.	Discrim.
24. apron	0.823	0.317	0.779	0.287
25.*road	0.385	0.227	0.453	0.300
26.* "	0.273	0.246	0.362	0.310
27.*trains	0.335	0.418	0.411	0.469
28.* "	0.278	0.322	0.354	0.354
29.*flax	0.448	0.174	0.518	0.212
30. "	0.249	0.342	0.258	0.412
31.*temperature †	0.137	0.211	0.210	0.339
32.* " †	0.218	0.241	0.306	0.326

* More difficult for 1956 students by 0.050 or more
** More difficult for 1977 students by 0.050 or more
† Items deemed inappropriate for comparison

TABLE 14
GATES PARAGRAPH READING ITEM ANALYSIS BOTH SEXES

Item & No.	YEAR 1956 N = 3569		YEAR 1977 N = 4430	
	Diffic.	Discrim.	Diffic.	Discrim.
1. kitten	0.985	0.141	0.987	0.128
2**hen	0.990	0.142	0.927	0.106
3. barn	0.984	0.240	0.988	0.126
4. comb	0.976	0.106	0.970	0.143
5. tree	0.957	0.131	0.933	0.146
6. newspapers	0.971	0.173	0.955	0.166
7. napkin	0.832	0.373	0.861	0.293
8.*pine	0.465	0.211	0.646	0.193
9. church	0.986	0.159	0.992	0.118
10. shovel	0.953	0.245	0.955	0.250
11. bicycle	0.956	0.137	0.953	0.173
12. bear	0.950	0.247	0.956	0.233
13. horses	0.904	0.253	0.883	0.226
14. toy	0.936	0.334	0.931	0.271
15. soup	0.878	0.334	0.875	0.303
16. corn	0.772	0.291	0.816	0.243
17. estate	0.579	0.378	0.598	0.367
18. "	0.880	0.223	0.908	0.156
19**fans	0.808	0.433	0.755	0.349
20. "	0.629	0.389	0.595	0.376
21.*senses	0.734	0.500	0.807	0.442
22.* "	0.746	0.475	0.803	0.393
23**apron	0.632	0.465	0.555	0.469

TABLE 14 continued
GATES PARAGRAPH READING ITEM ANALYSIS BOTH SEXES

Item & No.	YEAR 1956 N = 3569		YEAR 1977 N = 4430	
	Diffic.	Discrim.	Diffic.	Discrim.
24. apron	0.760	0.362	0.721	0.308
25. road	0.429	0.262	0.474	0.308
26. "	0.312	0.253	0.362	0.320
27.*trains	0.320	0.432	0.377	0.470
28.* "	0.268	0.349	0.340	0.362
29.*flax	0.433	0.228	0.492	0.203
30. "	0.244	0.351	0.243	0.396
31.†temperature	0.144	0.244	0.200	0.349
32.* † "	0.214	0.269	0.288	0.327

* More difficult for 1956 students by 0.050 or more
** More difficult for 1977 students by 0.050 or more
† Items deemed inappropriate for comparison

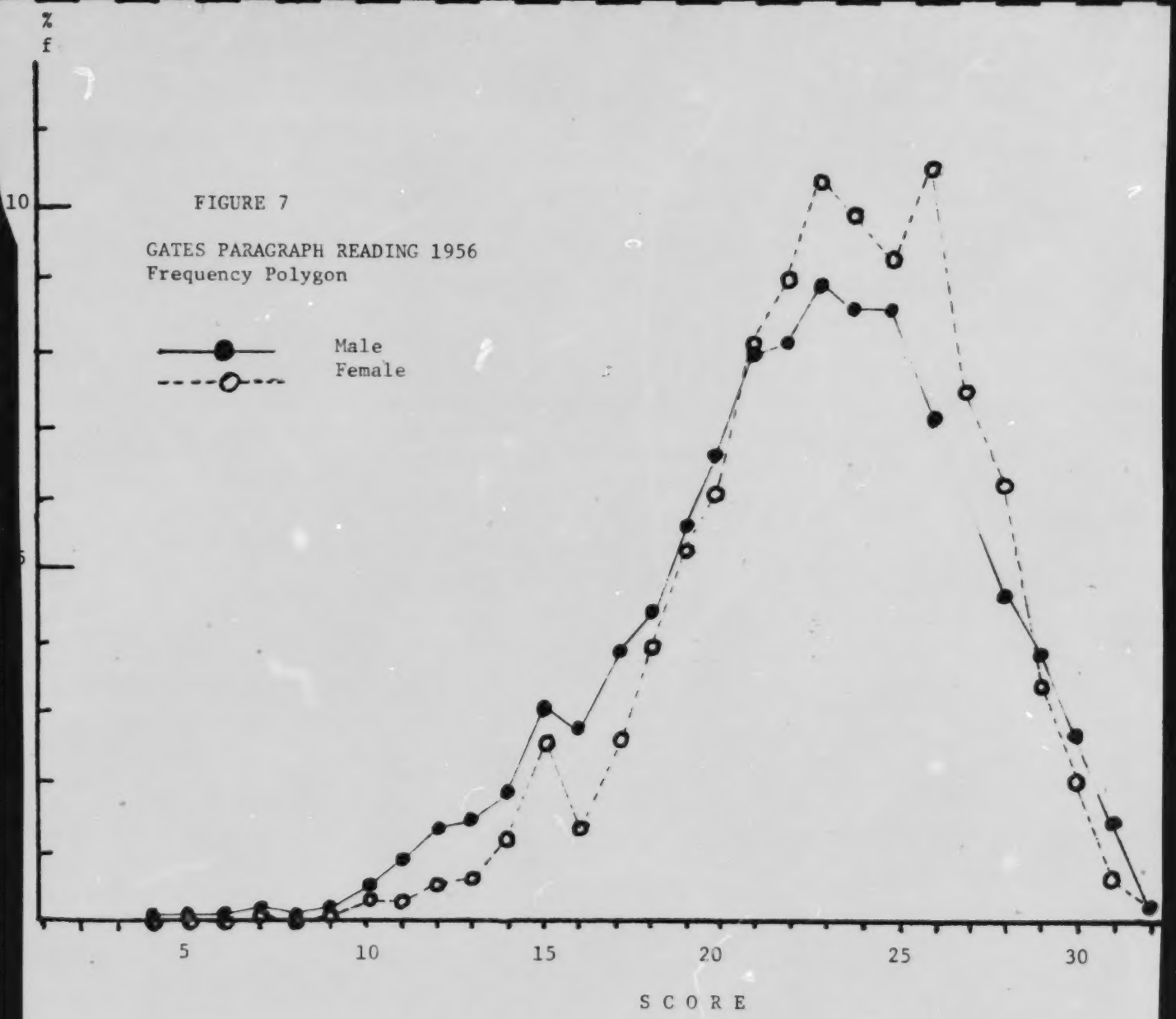


FIGURE 7

GATES PARAGRAPH READING 1956
Frequency Polygon

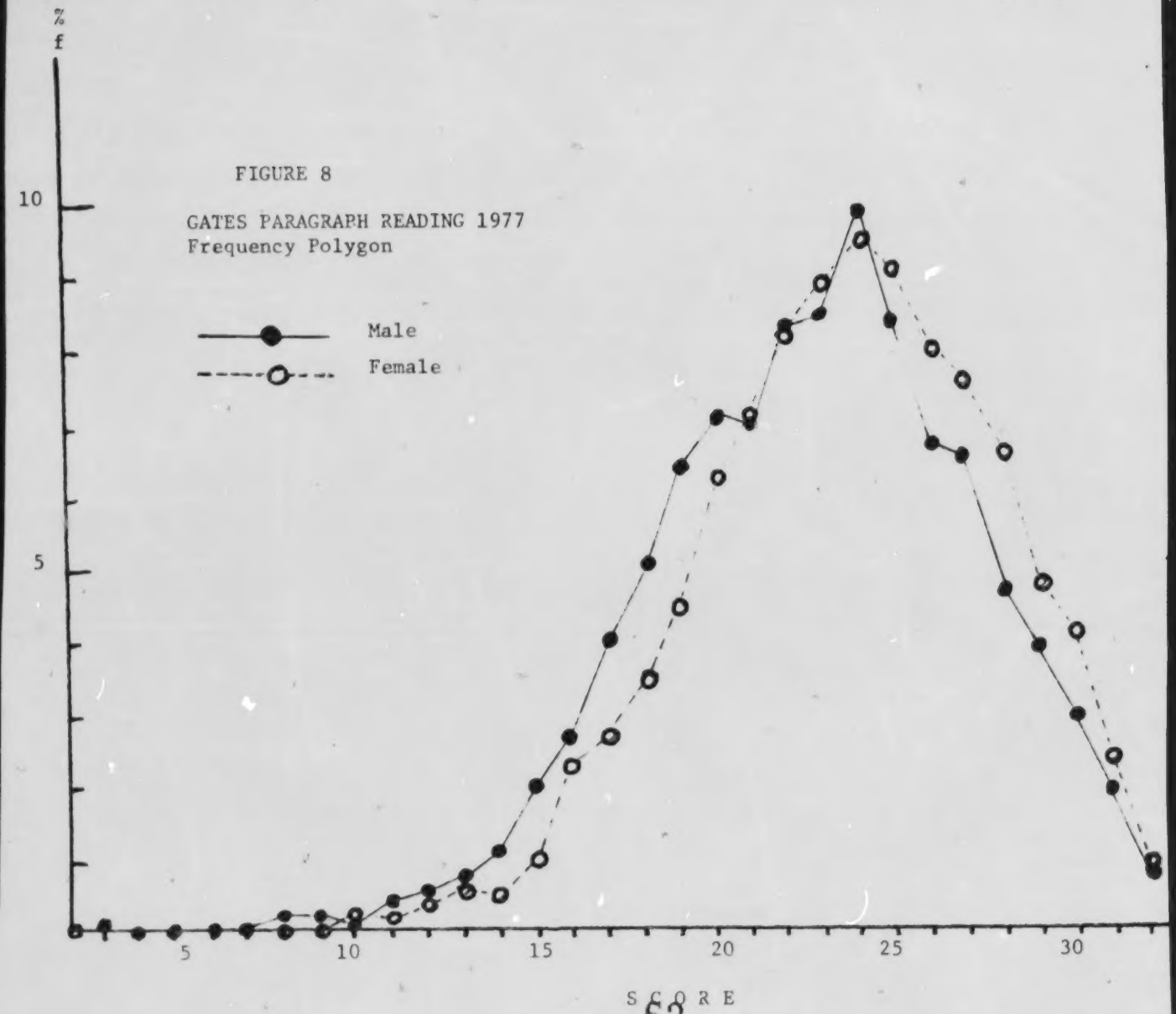


FIGURE 8

GATES PARAGRAPH READING 1977
Frequency Polygon

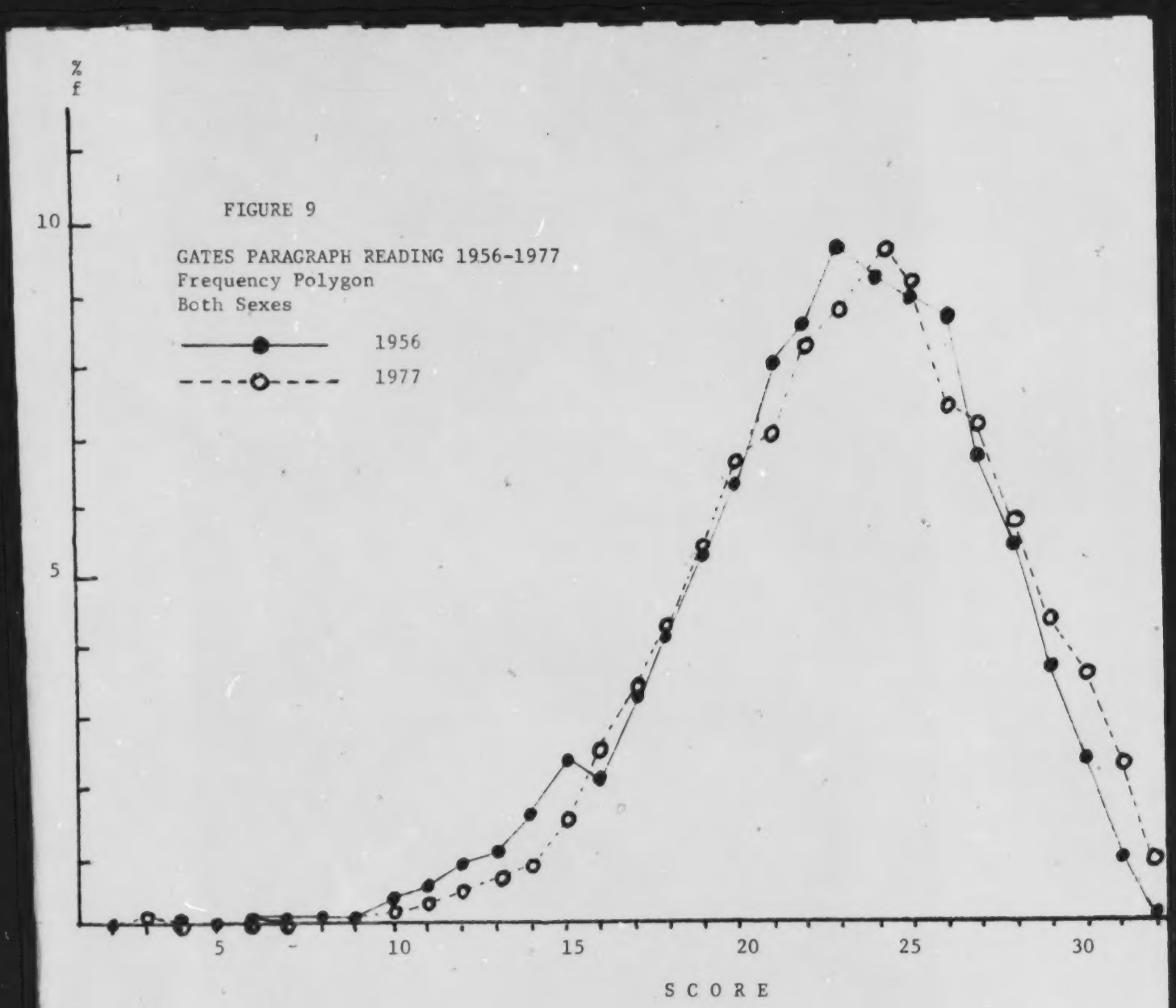


FIGURE 9

GATES PARAGRAPH READING 1956-1977
Frequency Polygon
Both Sexes

CHAPTER VII

CALIFORNIA ACHIEVEMENT TEST - READING

The California Achievement Test used in 1956 was copyright 1950 by the California Test Bureau. This test was reprinted and used in 1977. The Reading section of the test had 85 items, in two test parts: Reading Vocabulary (55 items) and Reading Comparison (30 items). In turn, these were in various sections or subtests: Word Form 20 items, Word Recognition 15, and Meaning of Opposites 20. These three subtests made up the Reading Vocabulary. The remaining subtests were Following Directions 10 items, Directly Stated Facts 10 items, and Interpretations 10 items. These three subtests constituted the Reading Comprehension part of the test.

The test manual explains that "the California Achievement Tests are the new editions of the diagnostic-survey instruments formerly called the Progressive Achievement Tests". The manual states that the tests are instruments for "accurately and objectively measuring pupil achievement in fundamental reading, arithmetic, and language skills". It claims that the standardizations were based on more than 50,000 cases at each test level.

The reliability of the three tests (Reading, Arithmetic, and Language) is provided by the manual as follows, based on "averaging the intercorrelations of the different forms" for an unstated number of Grade 2 students. Also given are the KR-20 reliabilities found in the present study.

Test	Reliability (Manual)	Reliability KR-20 (Present Study)
Reading Vocabulary	0.95	
Reading Comprehension	0.89	
Total Reading	0.92	0.87
Arithmetic Reasoning	0.92	
Arithmetic Fundamentals	0.91	
Total Arithmetic	0.92	0.84*
Mechanics of English	0.83	
Spelling	0.85	
Total Language	0.91	0.80
Total Test (Complete Battery)	0.93	

The validity of the tests is given a general treatment, the flavor of which is presented in Chapter 9 on California Achievement Test - Language. The manual claims "a high degree of validity".

In 1956 as shown in both Tables 2 and 3 (the figures are the same because no items were identified as inappropriate) the mean score for reading for 3576 students was 75.26 which compares with 77.58 for the 1977 students.

*Without the 30 items of sections F, G, and H.

TABLE 15

CALIFORNIA ACHIEVEMENT TEST READING COMPARISONS

		1956	1977
Male	Number	1778	2233
	Mean	74.41	76.98
	S.D.	7.54	6.44
Female	Number	1726	2164
	Mean	76.13	78.20
	S.D.	6.33	5.56
Both Sexes	Number	3504	4397
	Mean	75.26	77.58
	S.D.	6.98	5.93

Table 15 sets forth basic comparisons on the 85 items of the test. It will be noticed that in 1956 scores for females were higher than for males by 1.72 while the corresponding figure for 1977 was 1.22. For these groups, the sex superiority in reading as measured had decreased in the 21 years. A further perusal of Table 15 shows that the scores of males increased more in the 1956-1977 time span (2.57) than did that of females (2.07). This narrowed the gap.

Table 16 provides the distribution of total scores for males, females, and both sexes for 1956 and 1977 and figures 10, 11 and 12 the corresponding frequency polygons showing male-female 1956 comparisons, male-female 1977 comparisons, and comparisons of scores for both sexes 1956-1977. Table 16 and these figures provide detail for the summary of Table 15.

Subtest scores are presented in Table 17 for males 1956-1977, Table 18 for females 1956-1977, and Table 19 for both sexes 1956-1977. These data could reveal areas of strength or weakness by sex, or for the comparison years. However, a study of them indicates no great sex or time differences.

Table 20 provides an item analysis for males, with 1956-1977 comparisons. Tables 21 and 22 set forth comparable data for females and for both sexes. Thus, on item 12 (this-these, to be marked same or different) in 1956 males outperformed males in 1977 by more than 0.050. Similarly for items 74 and 75 ("May we play now" said John. "Yes, you may play for a while", answered mother) which called for a response in item 74 (John asked or told something) and in item 75 (Mother asked or told something), males in 1956 outperformed those in 1977 by more than 0.050. No ready explanation for these item differences comes to mind.

TABLE 16

CALIFORNIA ACHIEVEMENT TEST - READING

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1778	N=1726	N=3504	N=2233	N=2164	N=4397
SCORE	M	F	BOTH	M	F	BOTH
6				1		1
7				0		0
8				0		0
9				0		0
10				0		0
11				0		0
12				0		0
13				0		0
14				0		0
15				0		0
16				0		0
17				0		0
18				0	1	1
19				0	0	0
20				0	1	1
21				0	0	0
22		1	1	0	0	0
23		0	0	0	0	0
24		0	0	0	0	0
25		0	0	1	0	1
26		0	0	0	0	0
27		0	0	0	0	0
28	1	0	1	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	1	1

TABLE 16 continued
CALIFORNIA ACHIEVEMENT TEST - READING
DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1778	N=1726	N=3504	N=2233	N=2164	N=4397
SCORE	M	F	BOTH	M	F	BOTH
32	1	0	1	0	0	0
33	0	0	0	0	0	0
34	1	0	1	0	0	0
35	0	0	0	1	0	1
36	1	0	1	0	0	0
37	0	1	1	0	0	0
38	1	0	1	0	0	0
39	0	0	0	0	0	0
40	0	0	0	1	0	1
41	1	1	2	0	1	1
42	0	2	2	0	0	0
43	2	0	2	1	1	2
44	1	0	1	0	0	0
45	1	0	1	3	0	3
46	0	0	0	0	0	0
47	4	0	4	1	0	1
48	0	1	1	2	0	2
49	1	1	2	3	0	3
50	3	2	5	0	1	1
51	0	1	1	2	0	2
52	3	0	3	4	3	7
53	4	4	8	4	0	4
54	5	1	6	2	0	2
55	8	1	9	4	2	6
56	12	6	18	4	4	8
57	3	7	10	6	2	8

TABLE 16 continued

CALIFORNIA ACHIEVEMENT TEST - READING

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1778	N=1726	N=3504	N=2233	N=2164	N=4397
SCORE	M	F	BOTH	M	F	BOTH
58	17	6	23	5	2	7
59	12	7	19	12	1	13
60	13	4	17	7	5	12
61	21	10	31	9	3	12
62	17	9	26	8	7	15
63	18	17	35	16	5	21
64	27	24	51	10	16	26
65	34	18	52	13	13	26
66	49	21	70	16	8	24
67	34	17	51	20	18	38
68	37	27	64	28	21	49
69	49	33	82	30	24	54
70	71	28	99	48	36	84
71	70	49	119	43	39	82
72	57	63	120	47	33	80
73	66	76	142	93	63	156
74	83	81	164	106	74	180
75	97	73	170	113	96	209
76	84	101	185	136	125	261
77	113	145	258	173	144	317
78	129	143	272	160	143	303
79	131	162	293	175	179	354
80	123	160	283	209	204	413
81	120	156	276	210	238	448
82	101	120	221	205	258	463
83	78	98	176	150	219	369
84	56	37	93	117	134	251
85	18	12	30	34	39	73

Figure 10
California Achievement Test - Reading
Frequency Polygon 1956

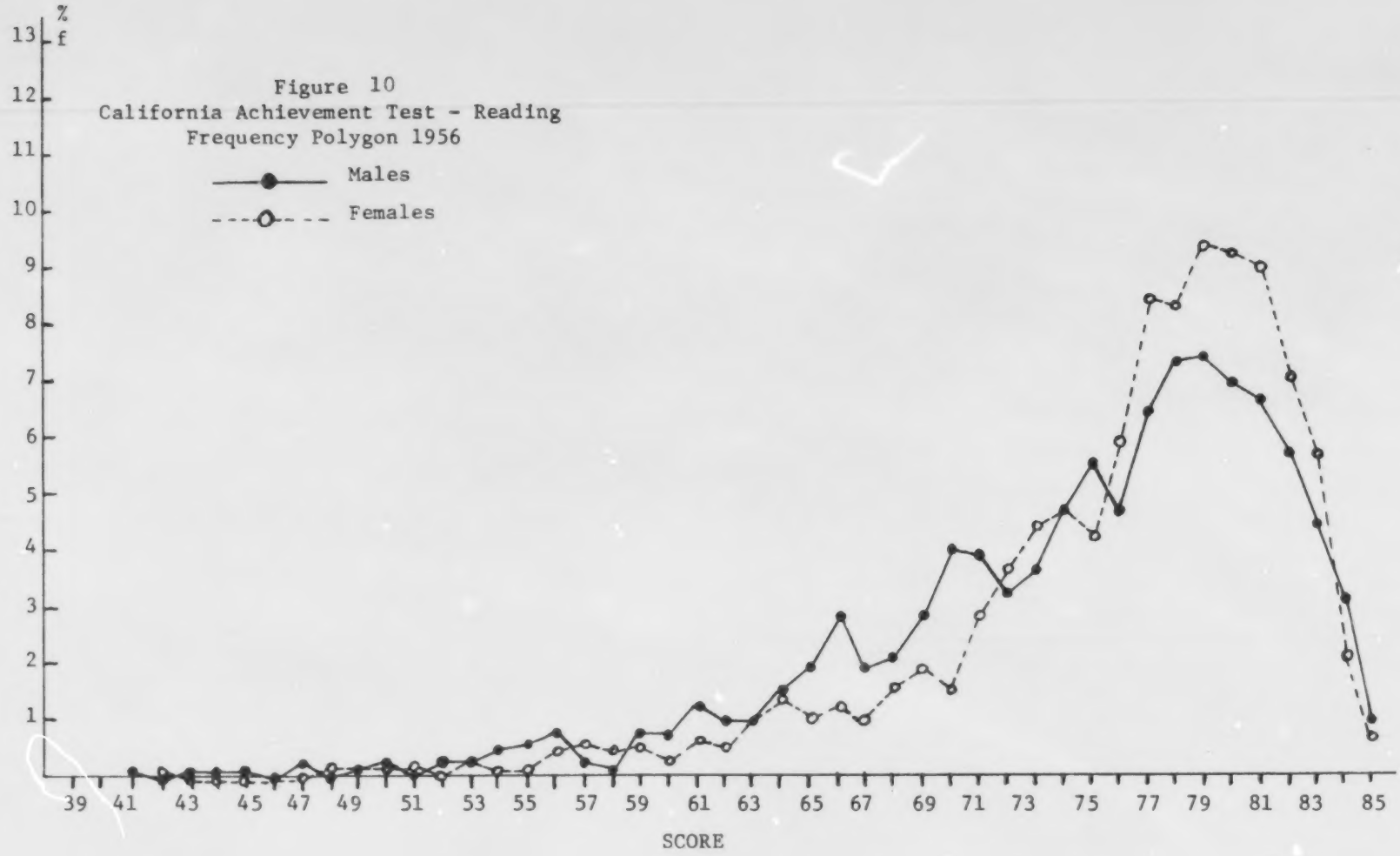


Figure 11
California Achievement Test - Reading
Frequency Polygon 1977

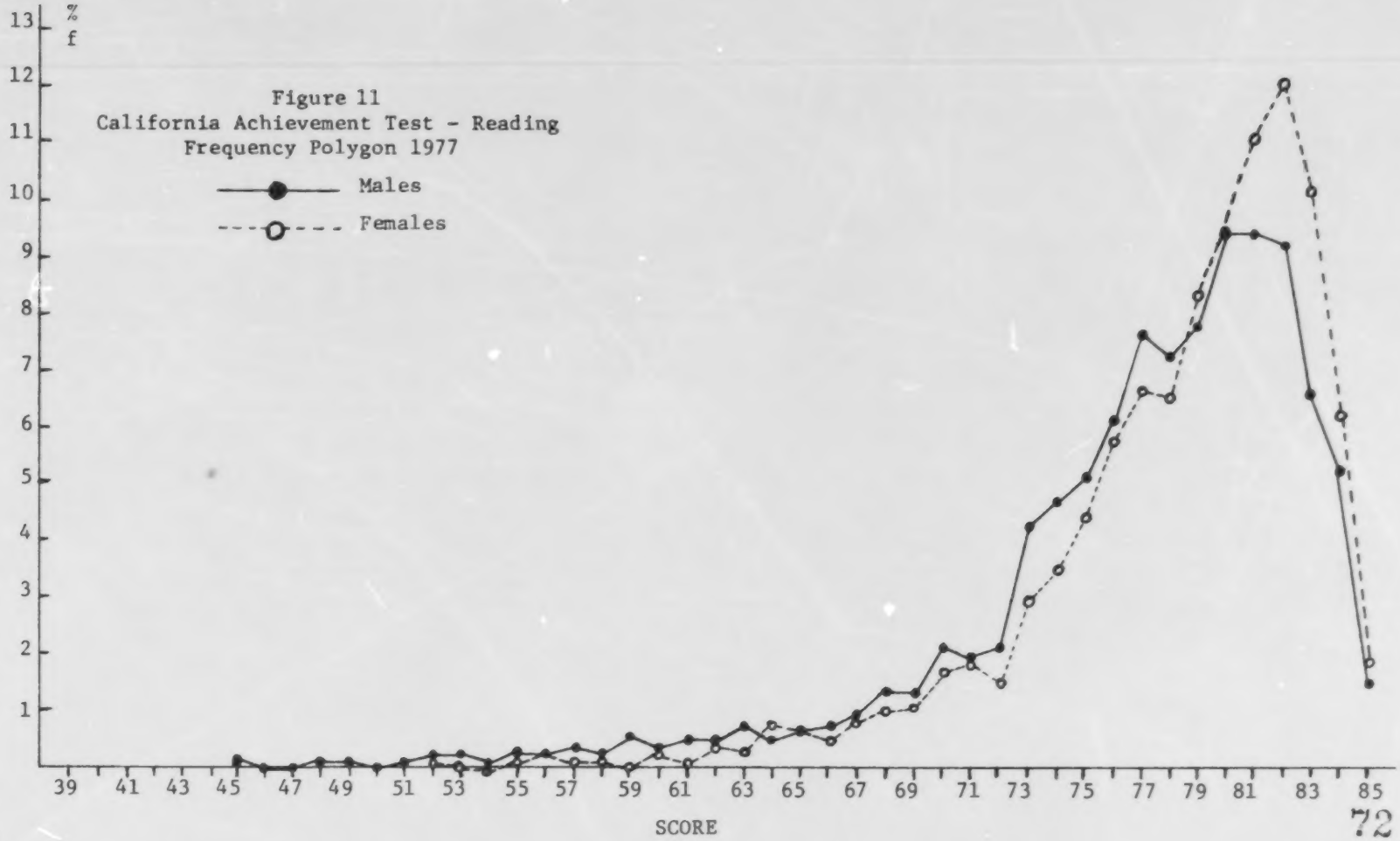


Figure 12
California Achievement Test - Reading
Frequency Polygon Both Sexes

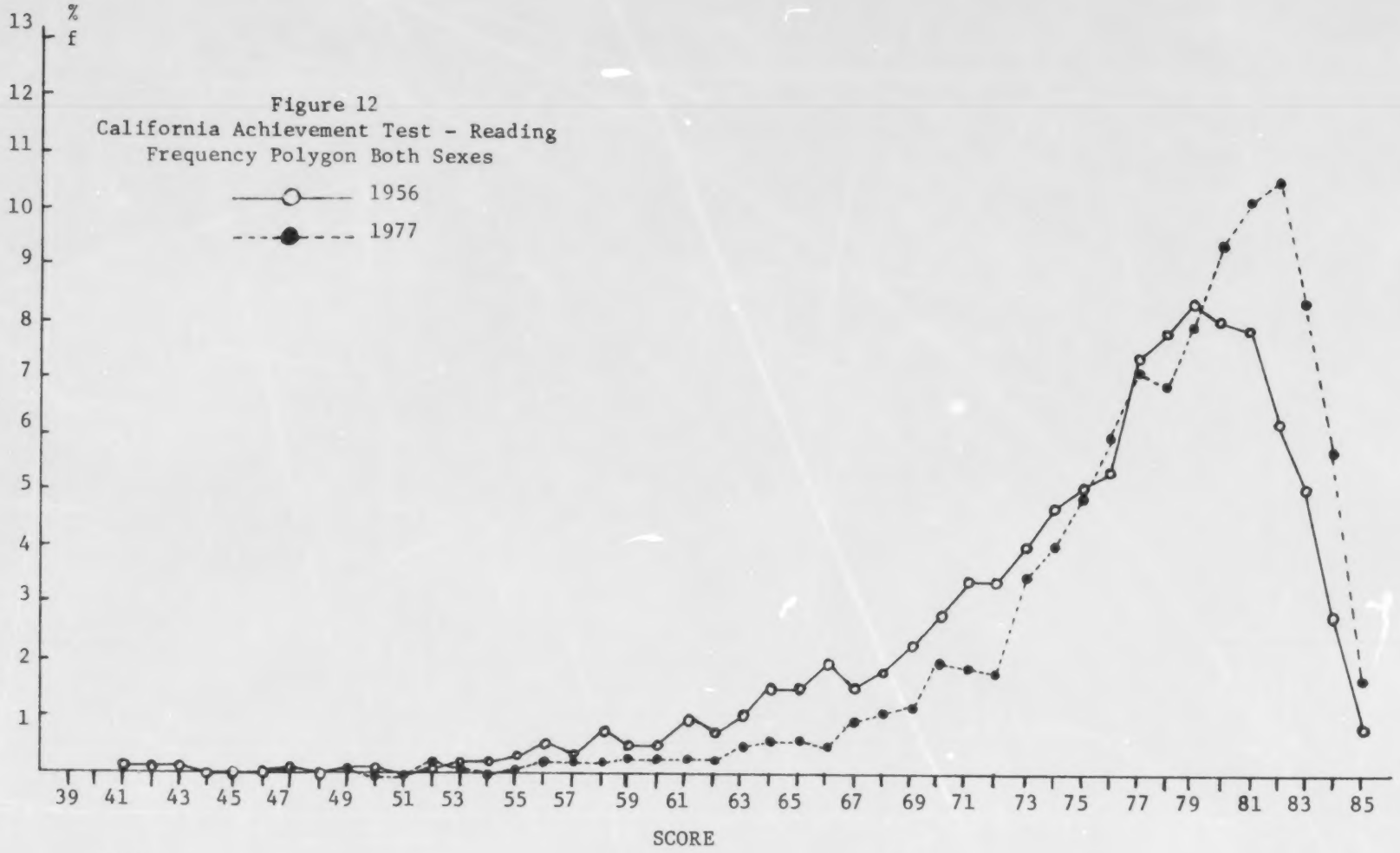


TABLE 17

CALIFORNIA ACHIEVEMENT TEST - READING

COMPARISON OF SUBTEST SCORES MALES

SUBTESTS	1956 N=1778 Mean S.D.	1977 N=2233 Mean S.D.
A. Word Form	18.80 1.61	18.83 1.66
B. Word Recognition	13.86 2.87	14.65 0.99
C. Meaning of Opposites	16.72 2.98	17.80 2.52
1. Reading Vocabulary (A + B + C)	49.37	51.28
D. Following Directions	9.24 1.11	9.34 1.12
E. Directly Stated Facts	9.14 1.51	9.02 1.65
F. Interpretations	6.66 1.97	7.31 1.91
2. Reading Comprehension (D + E + F)	25.02	25.68
Total Reading	74.39	76.96

TABLE 18

CALIFORNIA ACHIEVEMENT TEST - READING

COMPARISON OF SUBTEST SCORES FEMALES

SUBTESTS	1956 N=1726 Mean S.D.	1977 N=2164 Mean S.D.
A. Word Form	18.94 1.67	18.98 1.52
B. Word Recognition	14.08 2.61	14.73 1.00
C. Meaning of Opposites	17.32 2.38	18.14 2.23
1. Reading Vocabulary (A + B + C)	50.34	51.85
D. Following Directions	9.42 0.91	9.49 0.90
E. Directly Stated Facts	9.43 1.20	9.32 1.31
F. Interpretations	6.93 1.71	7.53 1.74
2. Reading Comprehension (D + E + F)	25.77	26.34
Total Reading	76.11	78.19

TABLE 19

CALIFORNIA ACHIEVEMENT TEST - READING

COMPARISON OF SUBTEST SCORES BOTH SEXES

SUBTESTS	1956 N=3504 Mean / S.D.	1977 N=4397 Mean / S.D.
A. Word Form	18.86 / 1.64	18.90 / 1.59
B. Word Recognition	13.97 / 2.74	14.66 / 1.00
C. Meaning of Opposites	17.01 / 2.72	17.96 / 2.39
1. Reading Vocabulary (A + B + C)	49.84	51.54
D. Following Directions	9.32 / 1.02	9.41 / 1.02
E. Directly Stated Facts	9.28 / 1.37	9.16 / 1.50
F. Interpretations	6.79 / 1.85	7.42 / 1.83
2. Reading Comprehension (D + E + F)	25.39	26.00
Total Reading	75.23	77.54

TABLE 20

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 MALES

TEST AND SECTION	ITEM	YEAR 1956 N=1778		YEAR 1977 N=2233	
		Diffic.	Discrim.	Diffic.	Discrim.
1. LANGUAGE VOCABULARY	1	0.996	-0.011	0.994	0.170
A. Word Form	2	0.994	0.046	0.991	0.147
	3	0.984	0.022	0.981	0.107
	4	0.954	0.205	0.950	0.214
	5	0.996	0.018	0.993	0.219
	6	0.964	0.157	0.960	0.189
	7	0.962	0.148	0.965	0.194
	8	0.726	0.186	0.728	0.173
	9	0.992	0.059	0.988	0.201
	10	0.919	0.275	0.961	0.256
	11	0.991	-0.000	0.985	0.134
	**12	0.907	0.017	0.845	0.055
	13	0.984	0.009	0.982	0.134
	14	0.859	0.215	0.883	0.230
	15	0.964	0.119	0.970	0.181
	16	0.984	0.087	0.979	0.144
	*17	0.862	0.323	0.921	0.307
	18	0.941	0.119	0.953	0.092
	19	0.884	0.137	0.859	0.158
	20	0.946	0.039	0.953	0.113
B. Word Recognition	21	0.956	0.282	0.997	0.255
	*22	0.945	0.286	0.995	0.214
	*23	0.943	0.291	0.996	0.221
	*24	0.932	0.300	0.996	0.245
	*25	0.947	0.299	0.997	0.255
	26	0.862	0.383	0.902	0.277

TABLE 20 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 MALES

TEST AND SECTION	ITEM	YEAR 1956 N=1778		YEAR 1977 N=2233	
		Diffic.	Discrim.	Diffic.	Discrim.
	*27	0.929	0.369	0.993	0.242
	*28	0.905	0.399	0.982	0.273
	*29	0.941	0.315	0.991	0.184
	30	0.951	0.361	0.995	0.233
	*31	0.934	0.338	0.993	0.203
	32	0.948	0.337	0.994	0.205
	33	0.959	0.302	0.996	0.242
	*34	0.934	0.440	0.986	0.217
	*35	0.772	0.228	0.836	0.255
C. Meaning of Opposites	36	0.983	0.299	0.990	0.277
	37	0.981	0.252	0.973	0.214
	38	0.990	0.247	0.992	0.317
	39	0.965	0.350	0.983	0.342
	40	0.969	0.315	0.980	0.257
	41	0.954	0.323	0.964	0.288
	42	0.940	0.361	0.974	0.299
	43	0.930	0.373	0.973	0.283
	44	0.984	0.097	0.985	0.250
	45	0.981	0.263	0.983	0.242
	46	0.972	0.323	0.975	0.281
	*47	0.742	0.389	0.804	0.343
	48	0.635	0.427	0.673	0.404
	49	0.921	0.406	0.964	0.333
	*50	0.574	0.424	0.715	0.374
	*51	0.623	0.445	0.787	0.416
	*52	0.763	0.456	0.886	0.464

TABLE 20 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 MALES

TEST AND SECTION	ITEM	YEAR 1956 N=1778 Diffic.	YEAR 1956 N=1778 Discrim.	YEAR 1977 N=2233 Diffic.	YEAR 1977 N=2233 Discrim.
	*53	0.655	0.416	0.879	0.439
	*54	0.317	0.268	0.501	0.282
	55	0.845	0.384	0.827	0.318
2. READING COMPREHENSION D. Following Directions	56	0.934	0.150	0.952	0.215
	57	0.985	0.176	0.976	0.258
	58	0.957	0.203	0.930	0.193
	59	0.972	0.103	0.957	0.188
	60	0.912	0.177	0.922	0.162
	61	0.963	0.079	0.983	0.246
	62	0.958	0.245	0.966	0.260
	63	0.838	0.243	0.865	0.286
	64	0.854	0.316	0.952	0.336
	65	0.863	0.393	0.841	0.358
E. Directly Stated Facts	66	0.908	0.330	0.914	0.278
	67	0.965	0.247	0.959	0.323
	68	0.805	0.257	0.768	0.261
	69	0.843	0.374	0.883	0.326
	70	0.974	0.281	0.973	0.438
	71	0.960	0.312	0.961	0.499
	72	0.960	0.377	0.962	0.439
	73	0.939	0.305	0.940	0.366
	**74	0.897	0.407	0.839	0.392
	**75	0.893	0.383	0.820	0.376
F. Interpretations	76	0.961	0.312	0.961	0.419
	77	0.922	0.381	0.940	0.349

TABLE 20 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 MALES

TEST AND SECTION	ITEM	YEAR 1956 N=1778		YEAR 1977 N=2233	
		Diffic.	Discrim.	Diffic.	Discrim.
	78	0.955	0.351	0.961	0.318
	*79	0.580	0.321	0.749	0.355
	80	0.438	0.330	0.411	0.252
	81	0.798	0.333	0.833	0.302
	**82	0.770	0.330	0.700	0.242
	83	0.406	0.174	0.400	0.185
	*84	0.540	0.282	0.787	0.376
	*85	0.278	0.272	0.572	0.344

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 21

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 FEMALES

TEST AND SECTION	ITEM	YEAR 1956 N=1726		YEAR 1977 N=2164	
		Diffic.	Discrim.	Diffic.	Discrim.
1. LANGUAGE VOCABULARY	1	0.991	0.081	0.993	0.073
A. Word Form	2	0.996	0.155	0.991	0.105
	3	0.982	0.113	0.982	0.046
	4	0.963	0.254	0.967	0.164
	5	0.994	0.120	0.995	0.076
	6	0.969	0.237	0.962	0.181
	7	0.980	0.171	0.968	0.084
	8	0.739	0.239	0.755	0.183
	9	0.987	0.140	0.995	0.117
	10	0.935	0.284	0.962	0.270
	11	0.991	0.141	0.992	0.068
	12	0.913	0.047	0.868	0.069
	13	0.986	0.121	0.992	0.061
	14	0.896	0.261	0.901	0.241
	15	0.968	0.187	0.976	0.169
	16	0.980	0.137	0.987	0.082
	17	0.904	0.321	0.927	0.290
	18	0.941	0.165	0.950	0.083
	19	0.880	0.168	0.881	0.114
	20	0.948	0.080	0.949	0.091
B. Word Recognition	21	0.962	0.365	0.996	0.333
	22	0.955	0.366	0.997	0.384
	23	0.952	0.358	0.994	0.301
	*24	0.944	0.352	0.996	0.370
	25	0.952	0.354	0.996	0.364
	26	0.890	0.344	0.937	0.288

TABLE 21 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 FEMALES

TEST AND SECTION	ITEM	YEAR 1956 N=1726		YEAR 1977 N=2164	
		Diffic.	Discrim.	Diffic.	Discrim.
	27	0.950	0.391	0.995	0.366
	28	0.944	0.411	0.985	0.335
	29	0.955	0.335	0.992	0.261
	30	0.961	0.426	0.994	0.313
	31	0.955	0.373	0.993	0.292
	32	0.961	0.406	0.995	0.334
	33	0.968	0.388	0.996	0.364
	34	0.955	0.462	0.986	0.306
	*35	0.775	0.252	0.874	0.240
C. Meaning of Opposites	36	0.991	0.183	0.991	0.262
	37	0.991	0.098	0.983	0.193
	38	0.999	0.095	0.996	0.282
	39	0.980	0.215	0.985	0.227
	40	0.988	0.181	0.982	0.191
	41	0.979	0.260	0.981	0.252
	42	0.973	0.222	0.974	0.314
	43	0.976	0.228	0.975	0.308
	44	0.987	0.069	0.991	0.217
	45	0.987	0.184	0.990	0.240
	46	0.987	0.246	0.984	0.250
	*47	0.749	0.343	0.820	0.390
	48	0.677	0.392	0.723	0.443
	49	0.957	0.293	0.974	0.282
	*50	0.630	0.383	0.762	0.372
	*51	0.694	0.403	0.825	0.406
	*52	0.844	0.421	0.922	0.421
	*53	0.721	0.370	0.908	0.403

TABLE 21 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 FEMALES

TEST AND SECTION	ITEM	YEAR 1956 N=1726		YEAR 1977 N=2164	
		Diffic.	Discrim.	Diffic.	Discrim.
	*54	0.337	0.232	0.510	0.266
	55	0.882	0.278	0.874	0.332
2. READING COMPREHENSION	56	0.952	0.135	0.965	0.170
D. Following Directions	57	0.990	0.157	0.989	0.185
	58	0.966	0.150	0.941	0.158
	59	0.977	0.063	0.973	0.162
	60	0.911	0.151	0.918	0.132
	61	0.970	0.096	0.988	0.198
	62	0.979	0.164	0.979	0.212
	63	0.870	0.181	0.890	0.253
	*64	0.904	0.244	0.970	0.260
	65	0.897	0.314	0.872	0.305
E. Directly Stated Facts	66	0.940	0.258	0.941	0.255
	67	0.977	0.212	0.973	0.276
	68	0.844	0.222	0.797	0.241
	69	0.883	0.289	0.909	0.306
	70	0.987	0.307	0.987	0.310
	71	0.979	0.285	0.980	0.353
	72	0.982	0.285	0.976	0.335
	73	0.963	0.259	0.963	0.293
	74	0.943	0.351	0.909	0.354
	75	0.930	0.378	0.882	0.338
F. Interpretations	76	0.977	0.337	0.975	0.388
	77	0.958	0.327	0.956	0.354
	78	0.979	0.319	0.964	0.308

TABLE 21 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 FEMALES

TEST AND SECTION	ITEM	YEAR 1956 N=1726		YEAR 1977 N=2164	
		Diffic.	Discrim.	Diffic.	Discrim.
	*79	0.584	0.230	0.742	0.296
	80	0.464	0.244	0.466	0.253
	81	0.851	0.261	0.824	0.327
	**82	0.815	0.249	0.743	0.185
	83	0.381	0.122	0.385	0.110
	*84	0.611	0.253	0.850	0.367
	*85	0.311	0.249	0.628	0.328

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 22

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 BOTH SEXES

TEST AND SECTION	ITEM	YEAR 1956 N=3504		YEAR 1977 N=4397	
		Diffic.	Discrim.	Diffic.	Discrim.
1. LANGUAGE VOCABULARY	1	0.993	0.034	0.993	0.120
A. Word Form	2	0.995	0.091	0.991	0.128
	3	0.983	0.063	0.981	0.080
	4	0.958	0.228	0.959	0.200
	5	0.995	0.066	0.994	0.162
	6	0.967	0.193	0.961	0.188
	7	0.971	0.162	0.966	0.147
	8	0.733	0.210	0.741	0.182
	9	0.989	0.095	0.992	0.176
	10	0.927	0.282	0.962	0.265
	11	0.991	0.063	0.988	0.113
	**12	0.910	0.031	0.857	0.066
	13	0.985	0.058	0.987	0.113
	14	0.877	0.240	0.891	0.239
	15	0.966	0.150	0.973	0.180
	16	0.982	0.108	0.983	0.124
	17	0.883	0.329	0.924	0.304
	18	0.941	0.139	0.952	0.088
	19	0.882	0.150	0.870	0.145
	20	0.947	0.058	0.951	0.103
B. Word Recognition	21	0.959	0.319	0.996	0.293
	22	0.950	0.322	0.996	0.288
	23	0.948	0.321	0.995	0.259
	*24	0.938	0.324	0.996	0.304
	25	0.950	0.324	0.997	0.308
	26	0.876	0.370	0.919	0.290

TABLE 22 continued
CALIFORNIA ACHIEVEMENT TEST - READING
ITEM ANALYSIS 1956-1977 BOTH SEXES

TEST AND SECTION	ITEM	YEAR 1956 N=3504		YEAR 1977 N=4397	
		Diffic.	Discrim.	Diffic.	Discrim.
	*27	0.939	0.382	0.994	0.299
	*28	0.924	0.411	0.983	0.305
	29	0.948	0.326	0.992	0.221
	30	0.956	0.391	0.995	0.272
	31	0.945	0.357	0.993	0.246
	32	0.955	0.368	0.995	0.265
	33	0.963	0.340	0.996	0.301
	34	0.944	0.453	0.986	0.261
	*35	0.773	0.237	0.855	0.256
C. Meaning of Opposites	36	0.987	0.260	0.991	0.274
	37	0.986	0.200	0.978	0.212
	38	0.994	0.206	0.994	0.309
	39	0.972	0.303	0.984	0.296
	40	0.978	0.274	0.981	0.232
	41	0.967	0.306	0.973	0.282
	42	0.956	0.318	0.973	0.307
	43	0.953	0.332	0.974	0.298
	44	0.985	0.087	0.988	0.242
	45	0.984	0.234	0.986	0.247
	46	0.980	0.300	0.980	0.275
	*47	0.745	0.368	0.812	0.370
	48	0.656	0.415	0.697	0.432
	49	0.939	0.370	0.969	0.317
	*50	0.602	0.410	0.738	0.382
	*51	0.658	0.433	0.806	0.420
	*52	0.803	0.451	0.904	0.457

TABLE 22 continued
CALIFORNIA ACHIEVEMENT TEST - READING
ITEM ANALYSIS 1956-1977 BOTH SEXES

TEST AND SECTION	ITEM	YEAR 1956 N=3504		YEAR 1977 N=4397	
		Diffic.	Discrim.	Diffic.	Discrim.
	*53	0.687	0.402	0.893	0.433
	*54	0.326	0.253	0.506	0.278
	55	0.863	0.344	0.850	0.333
2. READING COMPREHENSION D. Following Directions	56	0.943	0.149	0.959	0.202
	57	0.988	0.171	0.982	0.238
	58	0.961	0.183	0.935	0.182
	59	0.974	0.088	0.965	0.184
	60	0.911	0.164	0.920	0.149
	61	0.967	0.088	0.986	0.231
	62	0.968	0.221	0.972	0.246
	63	0.854	0.221	0.878	0.279
	*64	0.879	0.295	0.961	0.314
	65	0.880	0.365	0.856	0.344
E. Directly Stated Facts	66	0.924	0.307	0.927	0.277
	67	0.971	0.237	0.966	0.311
	68	0.824	0.248	0.782	0.258
	69	0.862	0.344	0.896	0.326
	70	0.981	0.294	0.980	0.398
	71	0.969	0.307	0.970	0.453
	72	0.971	0.349	0.969	0.406
	73	0.951	0.293	0.952	0.346
	74	0.919	0.393	0.873	0.389
	**75	0.911	0.388	0.851	0.372
F. Interpretations	76	0.969	0.327	0.968	0.415
	77	0.939	0.367	0.948	0.357

TABLE 22 continued

CALIFORNIA ACHIEVEMENT TEST - READING

ITEM ANALYSIS 1956-1977 BOTH SEXES

TEST AND SECTION	ITEM	YEAR 1956 N=3504		YEAR 1977 N=4397	
		Diffic.	Discrim.	Diffic.	Discrim.
	78	0.967	0.345	0.963	0.318
	*79	0.582	0.279	0.745	0.330
	80	0.451	0.293	0.438	0.260
	81	0.824	0.309	0.829	0.316
	**82	0.792	0.301	0.722	0.224
	83	0.394	0.147	0.393	0.152
	*84	0.575	0.276	0.818	0.383
	*85	0.294	0.264	0.600	0.346

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

CHAPTER VIII

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

The California Achievement Test used in 1956 was copyright 1950 by the California Test Bureau. This test was reprinted and used in 1977. The Arithmetic section of the test had a number of parts and items as shown in Table 23 . Teachers and various specialists were asked to indicate items deemed inappropriate, and in the arithmetic test 12 items were identified. Table 23 sets forth the tests (3. Arithmetic Reasoning and 4. Arithmetic Fundamentals) with the sections (A, B, C, etc.) and the numbers of the sections (1, 2, 3, ..., 9).

TABLE 23

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

TESTS, SECTIONS, AND ITEMS

Tests	Sections or Sub-Tests	Sub-Test No.	Test Items	Inappropriate	Items Remaining
3. Arithmetic Reasoning	A Number and Sequence	1	5		5
	B Money	2	5		5
	C Number and Time	3	10	8,9,10	7
	D Signs & Symbols	4	10	10	9
	E Problems	5	10	3,4,5	7
	Totals		40	7	33
4. Arithmetic Fundamentals	F Addition Combinations	6	10		10
	G Subtraction Combinations	7	10		10
	H Multiplication Combinations	8	10		10
	I Problems	9	10	4,7,8,9, 10.	5
	Totals		40	5	35
	Grand Totals		80	12	68

The items deemed inappropriate and omitted from the comparisons were Test 3, section C, items 8, 9, 10; Test 3, section D, item 10; Test 3, section E, items 3, 4, 5; and Test 4, section I, items 4, 7, 8, 9, 10, a total of 12 items.

In 1956 on the 80 items, the 3577 students obtained an average score of 63.44 while in 1977 the 4367 students obtained an average score of 61.72 (see Table 3). On the 68 items remaining after eliminating items deemed inappropriate (see Table 2), the corresponding averages were 55.98 and 55.56.

Table 3 shows that the mean score for the Grade III students on all 80 items in 1956 was 63.44 and the corresponding figure for 1977 was 61.72. The 1956 students made a higher score.

Table 24 sets forth the breakdown of scores for the 50 items remaining after Test 4, sections F, G, and H were removed. These sections, with 30 items, were not included in the item analyses.

Table 25 presents the breakdown of scores on 38 items: the 80 of the original test less Test 4, sections F, G. H, less 12 items deemed inappropriate.

As can be seen by comparing the figures in Tables 24 and 25 the elimination of items deemed inappropriate reduced the difference in mean scores between the 1956 and 1977 students.

TABLE 24

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

50 ITEMS - COMPARISONS

		1956	1977
Male	Number	1782	2201
	Mean	37.25	34.84
	S.D.	5.87	6.63
Female	Number	1724	2147
	Mean	37.75	35.45
	S.D.	5.41	6.33
Both Sexes	Number	3506	4348
	Mean	37.50	35.14
	S.D.	5.65	6.49

TABLE 25
CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC
38 ITEMS - COMPARISONS

		1956	1977
Male	Number	1782	2201
	Mean	29.83	28.76
	S.D.	4.20	4.83
Female	Number	1724	2147
	Mean	30.21	29.21
	S.D.	3.78	4.64
Both Sexes	Number	3506	4348
	Mean	30.02	28.98
	S.D.	4.00	4.74

The sections F, G, H, viz."Addition Combinations", "Subtraction Combinations", and "Multiplication Combinations" with a total of 30 items, were not included in the item analysis. The distribution of scores for the remaining 50 items (including those deemed inappropriate) is presented in Table 26. Figures 13, 14, and 15 present the frequency polygons for male-female 1956, male-female 1977, and both sexes 1956-1977.

Tables 27, 28, and 29 present the item analysis of the 50 items remaining when Test 4, Sections F, G, H were not included.

Twelve items were deemed inappropriate by teachers and various specialists. The distribution of scores for the 38 items remaining after not including Test 4, Sections F, G, H and these 12 items deemed inappropriate is provided in Table 30. Figures 16, 17, and 18 present the frequency polygons for male-female 1956, male-female 1977, and both sexes 1956-1977 for these 38 items.

Tables 31, 32, and 33 present the item analyses of the 38 items remaining after eliminating inappropriate items and Test 4, sections F, G, H.

Subtest scores for 68 items, for males 1956-1977, females 1956-1977, and both sexes 1956-1977 are shown in Tables 34, 35, and 36 while Tables 37, 38, and 39 present corresponding data for 80 items.

It is of interest to note that for each year, Grade III females score slightly higher than do males on both arithmetic reasoning and on arithmetic fundamentals. The traditional male superiority in mathematics has evidently not occurred by Grade III.

TABLE 26

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1782	N=1724	N=3506	N=2201	N-2147	N-4348
SCORE	M	F	BOTH	M	F	BOTH
1					1	1
2				1	0	1
3				0	2	2
4				0	1	1
5				0	2	2
6				2	1	3
7				3	0	3
8		1	1	1	1	2
9		1	1	0	1	1
10		0	0	0	0	0
11		0	0	5	0	5
12	1	1	2	4	0	4
13	3	1	4	5	1	6
14	0	1	1	1	4	5
15	3	1	4	1	4	5
16	5	2	7	2	3	5
17	5	0	5	8	6	14
18	3	3	6	9	3	12
19	5	4	9	14	9	23
20	4	4	8	7	10	17
21	7	4	11	17	11	28
22	8	4	12	19	10	29
23	8	9	17	21	18	39
24	11	10	21	28	24	52
25	16	9	25	46	26	72
26	14	11	25	38	36	74

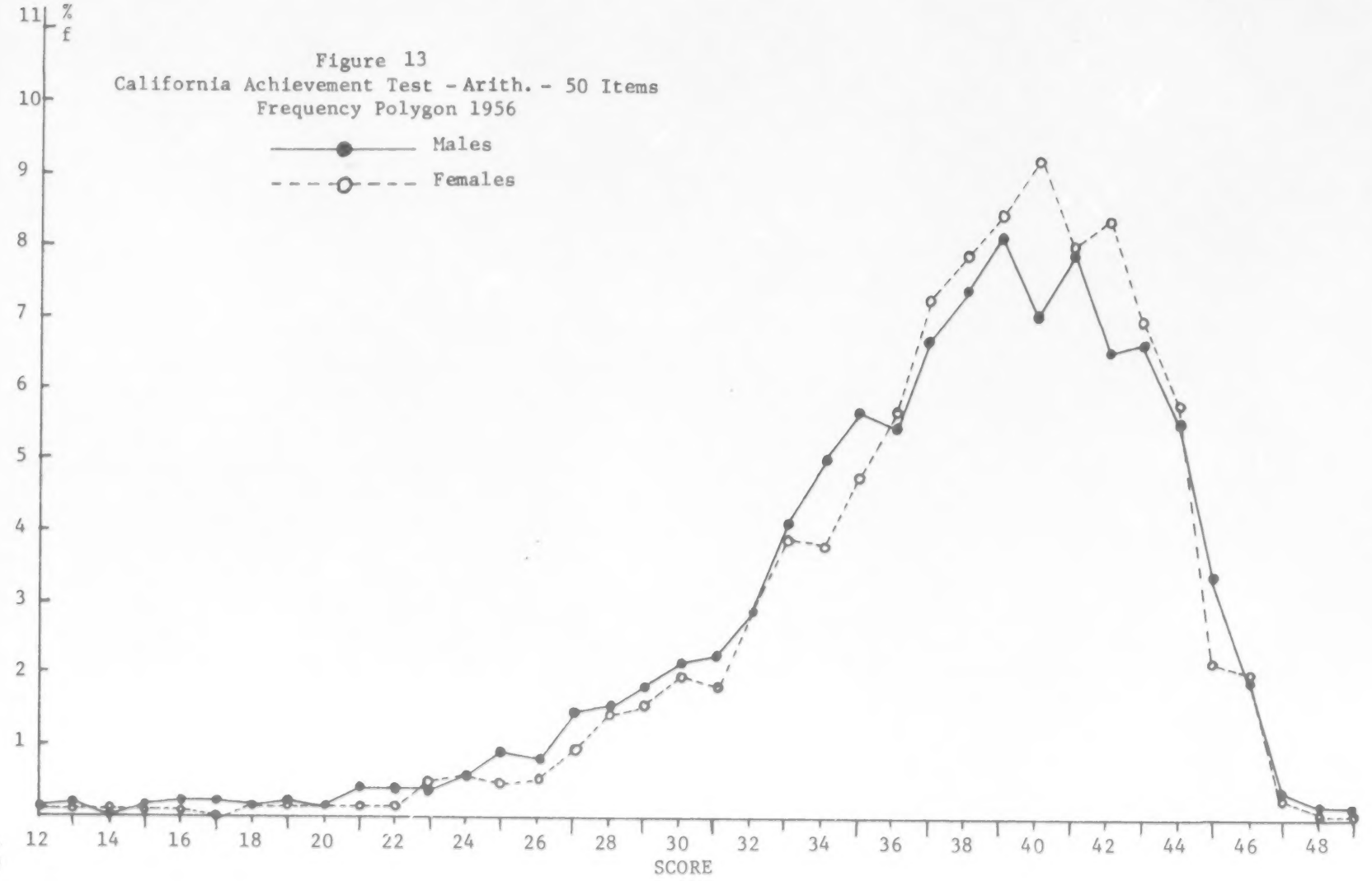
TABLE 26 continued

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1782	N=1724	N=3506	N=2201	N-2147	N=4348
SCORE	M	F	BOTH	M	F	BOTH
27	27	17	44	59	38	97
28	28	26	54	61	65	126
29	32	28	60	74	70	144
30	39	34	73	95	72	167
31	41	31	72	94	83	177
32	52	50	102	110	105	215
33	74	68	142	104	126	230
34	90	65	155	129	121	250
35	101	83	184	107	136	243
36	98	99	197	118	121	239
37	120	126	246	165	133	298
38	131	137	268	125	138	263
39	146	147	293	151	143	294
40	126	161	287	122	141	263
41	140	138	278	115	123	238
42	118	145	263	119	112	231
43	119	121	240	80	103	183
44	100	100	200	70	70	140
45	60	40	100	42	40	82
46	33	34	67	19	22	41
47	8	5	13	7	9	16
48	3	2	5	2	2	4
49	3	1	3	1		1

Figure 13
California Achievement Test - Arith. - 50 Items
Frequency Polygon 1956



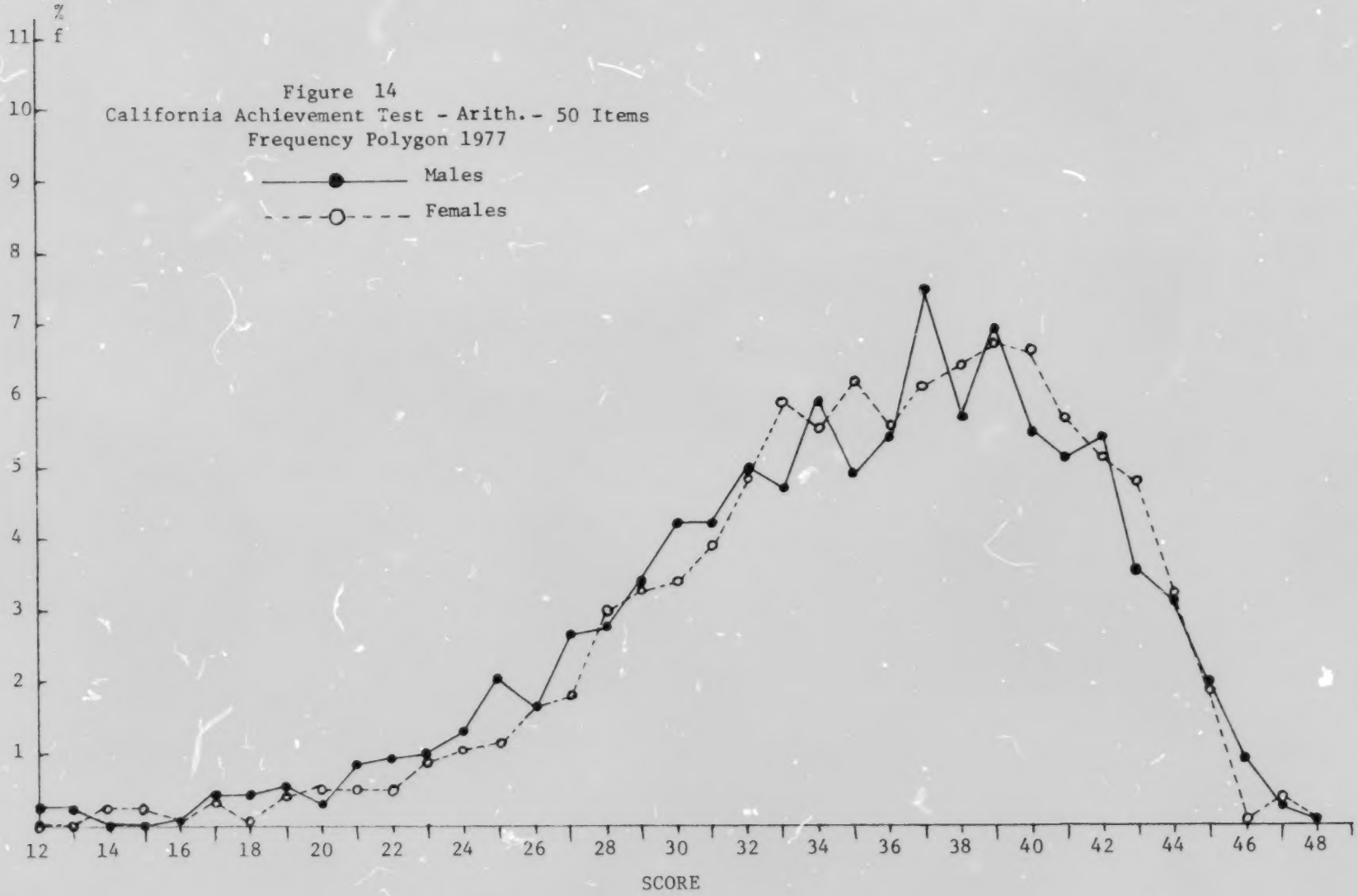


Figure 14
California Achievement Test - Arith.- 50 Items
Frequency Polygon 1977

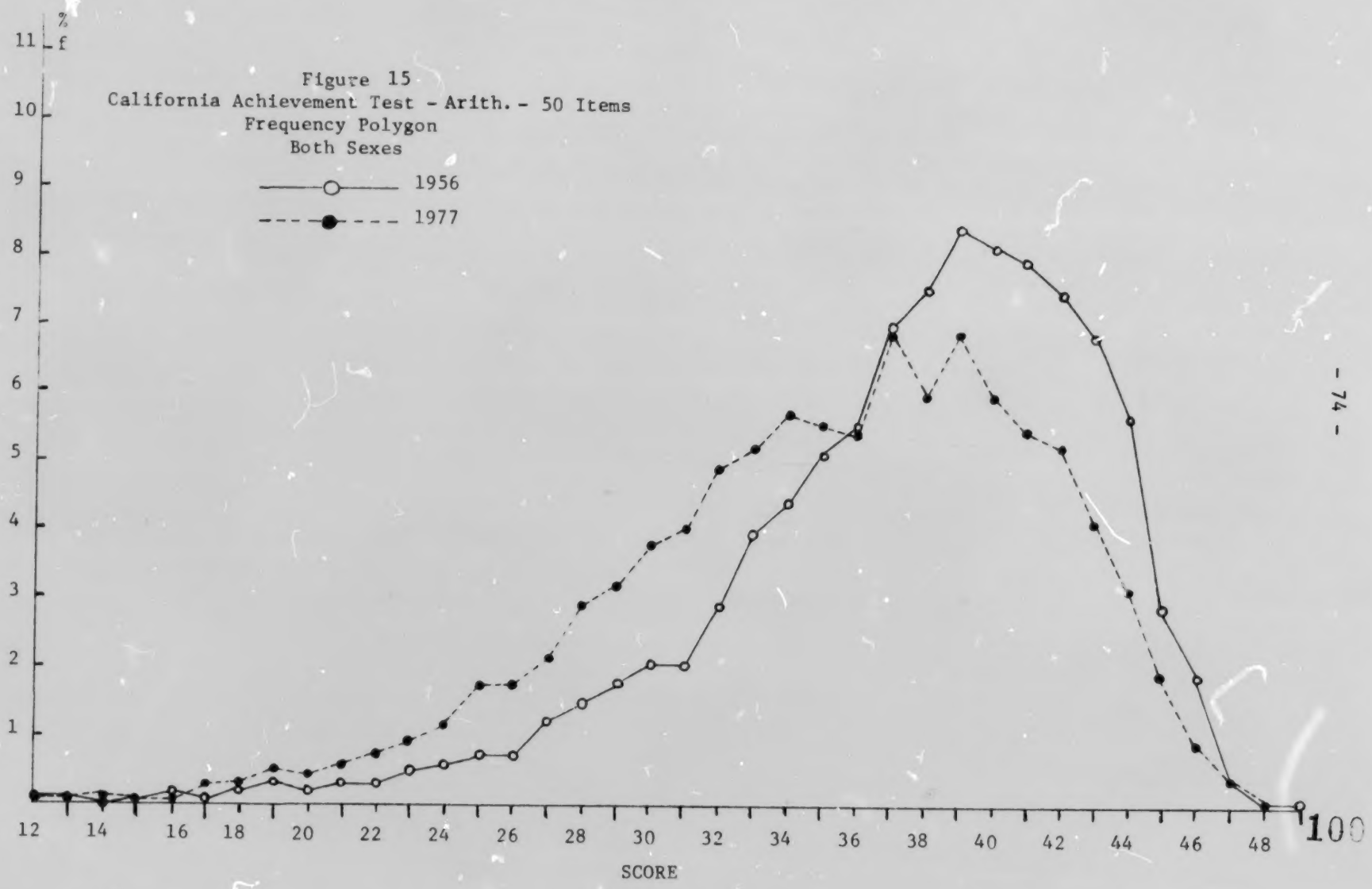


Figure 15
California Achievement Test - Arith. - 50 Items
Frequency Polygon
Both Sexes

TABLE 27

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

ITEM ANALYSIS 1956-1977 MALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1782 Diffic.	YEAR 1956 N=1782 Discrim.	YEAR 1977 N=2201 Diffic.	YEAR 1977 N=2201 Discrim.
	3. ARITHMETIC REASONING					
1	1. Number and Sequence. Section A.	1	0.989	0.102	0.991	0.187
2		2	0.992	0.095	0.987	0.162
3		3	0.994	0.051	0.973	0.120
4		4	0.993	0.027	0.989	0.131
5		5	0.810	0.241	0.831	0.273
6	2. Money. Section B.	** 1	0.971	0.237	0.915	0.328
7		2	0.977	0.243	0.932	0.307
8		** 3	0.941	0.320	0.880	0.356
9		** 4	0.888	0.337	0.566	0.384
10		** 5	0.732	0.404	0.443	0.416
11	3. Number and Time Section C.	* 1	0.901	0.3 33	0.952	0.327
12		2	0.910	0.397	0.943	0.332
13		3	0.977	0.138	0.970	0.230
14		4	0.536	0.271	0.533	0.291
15		5	0.891	0.409	0.876	0.361
16		6	0.907	0.397	0.900	0.346
17		7	0.903	0.443	0.900	0.373
18		** 8†	0.861	0.398	0.706	0.325
19		** 9†	0.641	0.388	0.283	0.337
20		** 10†	0.678	0.395	0.315	0.358
21	4. Signs and Symbols. Section D.	** 1	0.951	0.267	0.862	0.333
22		** 2	0.932	0.231	0.841	0.342
23		3	0.947	0.189	0.981	0.151
24		* 4	0.770	0.242	0.937	0.237
25		* 5	0.870	0.285	0.946	0.264

TABLE 27 continued

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

ITEM ANALYSIS 1956-1977 MALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1782 Diffic.	YEAR 1956 N=1782 Discrim.	YEAR 1977 N=2201 Diffic.	YEAR 1977 N=2201 Discrim.
26		6	0.553	0.246	0.587	0.281
27		7	0.624	0.268	0.654	0.325
28		8	0.940	0.333	0.940	0.351
29		9	0.919	0.388	0.915	0.392
30		10†	0.791	0.373	0.822	0.434
31	5. Problems. Section E.	1	0.869	0.256	0.872	0.286
32		2	0.882	0.305	0.871	0.311
33		3†	0.805	0.349	0.816	0.334
34		** 4†	0.749	0.338	0.650	0.393
35		5†	0.860	0.310	0.840	0.355
36		6	0.627	0.371	0.589	0.414
37		7	0.038	0.113	0.065	0.157
38		* 8	0.261	0.320	0.335	0.305
39		9	0.016	0.123	0.024	0.117
40		10	0.274	0.342	0.263	0.334
	4. ARITHMETIC FUNDAMENTALS					
41	9. Problems. Section I.	1	0.859	0.236	0.816	0.265
42		** 2	0.813	0.271	0.748	0.351
43		** 3	0.907	0.197	0.776	0.356
44		** 4†	0.858	0.203	0.706	0.360
45		** 5	0.740	0.344	0.605	0.441
46		** 6	0.727	0.343	0.549	0.441
47		** 7†	0.498	0.346	0.345	0.418
48		8†	0.026	0.142	0.028	0.154
49		9†	0.565	0.291	0.551	0.374
50		** 10†	0.094	0.195	0.019	0.141

†Items deemed inappropriate for comparisons.
*More difficult for 1956 students by 0.05 or more.
**More difficult for 1977 students by 0.05 or more.

TABLE 28

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

ITEM ANALYSIS 1956-1977 FEMALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1724		YEAR 1977 N=2147	
			Diffic.	Discrim.	Diffic.	Discrim.
1	3. ARITHMETIC REASONING	1	0.997	0.046	0.988	0.258
2	1. Number and Sequence.	2	0.995	0.043	0.987	0.268
3	Section A.	3	0.997	0.086	0.972	0.184
4		4	0.997	0.034	0.986	0.258
5		5	0.858	0.239	0.845	0.268
6	2. Money.	** 1	0.973	0.247	0.916	0.339
7	Section B.	2	0.968	0.301	0.927	0.357
8		** 3	0.912	0.338	0.855	0.389
9		** 4	0.912	0.327	0.636	0.426
10		** 5	0.765	0.423	0.485	0.442
11	3. Number and Time.	1	0.937	0.251	0.966	0.309
12	Section C.	2	0.939	0.318	0.949	0.289
13		3	0.981	0.156	0.976	0.275
14		4	0.510	0.321	0.529	0.311
15		5	0.926	0.347	0.895	0.337
16		6	0.940	0.339	0.918	0.333
17		7	0.940	0.314	0.918	0.335
18		** 8†	0.915	0.330	0.734	0.326
19		** 9†	0.679	0.366	0.294	0.347
20		** 10†	0.690	0.396	0.314	0.370
21	4. Signs and Symbols.	** 1	0.961	0.202	0.897	0.352
22	Section D.	** 2	0.949	0.143	0.874	0.361
23		3	0.958	0.206	0.980	0.209
24		* 4	0.782	0.304	0.927	0.242
25		* 5	0.844	0.303	0.939	0.325
26		* 6	0.531	0.181	0.585	0.261

TABLE 28 continued

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

ITEM ANALYSIS 1956-1977 FEMALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1724 Diffic.	YEAR 1956 N=1724 Discrim.	YEAR 1977 N=2147 Diffic.	YEAR 1977 N=2147 Discrim.
27		7	0.642	0.227	0.659	0.324
28		8	0.964	0.334	0.949	0.351
29		9	0.938	0.356	0.921	0.372
30		10†	0.818	0.371	0.821	0.421
31	5. Problems. Section E.	1	0.908	0.276	0.890	0.224
32		2	0.933	0.287	0.899	0.257
33		3†	0.828	0.360	0.846	0.292
34		** 4†	0.700	0.308	0.597	0.353
35		5†	0.862	0.322	0.846	0.322
36		6	0.623	0.360	0.611	0.389
37		7	0.039	0.116	0.060	0.089
38		* 8	0.200	0.258	0.302	0.314
39		9	0.016	0.098	0.026	0.148
40		10	0.229	0.292	0.229	0.305
	4. ARITHMETIC FUNDAMENTALS					
41	9. Problems. Section I.	1	0.882	0.221	0.833	0.293
42		2	0.833	0.257	0.786	0.298
43		** 3	0.917	0.218	0.834	0.327
44		** 4†	0.869	0.237	0.771	0.316
45		** 5	0.752	0.374	0.646	0.383
46		** 6	0.762	0.413	0.612	0.379
47		** 7†	0.539	0.378	0.398	0.370
48		8†	0.012	0.054	0.029	0.112
49		9†	0.543	0.293	0.573	0.327
50		** 10†	0.086	0.198	0.017	0.112

†Items deemed inappropriate for comparisons.
*More difficult for 1956 students by 0.05 or more.
**More difficult for 1977 students by 0.05 or more.

TABLE 29

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

ITEM ANALYSIS 1956-1977 BOTH SEXES

	TEST AND SUBTEST	ITEM	YEAR 1956 N=3506		YEAR 1977 N=4348	
			Diffic.	Discrim.	Diffic.	Discrim.
	3. ARITHMETIC REASONING					
1	1. Number and Sequence. Section A.	1	0.993	0.083	0.990	0.222
2		2	0.993	0.075	0.987	0.213
3		3	0.995	0.066	0.973	0.151
4		4	0.995	0.030	0.988	0.194
5		5	0.834	0.242	0.838	0.271
6	2. Money. Section B.	** 1	0.972	0.242	0.915	0.333
7		2	0.973	0.269	0.929	0.331
8		** 3	0.926	0.323	0.868	0.369
9		** 4	0.900	0.333	0.601	0.405
10		** 5	0.748	0.413	0.463	0.429
11	3. Number and Time. Section C.	1	0.919	0.300	0.959	0.319
12		2	0.924	0.364	0.946	0.312
13		3	0.979	0.147	0.973	0.251
14		4	0.523	0.293	0.531	0.300
15		5	0.908	0.383	0.886	0.351
16		6	0.924	0.373	0.909	0.341
17		7	0.922	0.390	0.909	0.356
18		** 8†	0.888	0.370	0.720	0.326
19		** 9†	0.660	0.379	0.288	0.342
20		** 10†	0.684	0.395	0.315	0.363
21	4. Signs and Symbols. Section D.	** 1	0.956	0.239	0.879	0.343
22		** 2	0.940	0.194	0.857	0.352
23		3	0.952	0.197	0.980	0.179
24		* 4	0.776	0.271	0.932	0.238
25		* 5	0.857	0.291	0.943	0.293
26		6	0.542	0.214	0.586	0.271

TABLE 29 continued

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 50 ITEMS

ITEM ANALYSIS 1956-1977 BOTH SEXES

	TEST AND SUBTEST	ITEM	YEAR 1956 N=3506 Diffic.	YEAR 1956 N=3506 Discrim.	YEAR 1977 N=4348 Diffic.	YEAR 1977 N=4348 Discrim.
27		7	0.633	0.249	0.656	0.324
28		8	0.952	0.333	0.945	0.352
29		9	0.928	0.375	0.918	0.382
30		10†	0.804	0.373	0.822	0.427
31	5. Problems. Section E.	1	0.888	0.267	0.881	0.258
32		2	0.907	0.299	0.885	0.288
33		3†	0.816	0.355	0.830	0.315
34		** 4†	0.725	0.319	0.624	0.370
35		5†	0.861	0.315	0.843	0.340
36		6	0.625	0.365	0.600	0.402
37		7	0.038	0.114	0.063	0.125
38		* 8	0.231	0.288	0.319	0.307
39		9	0.016	0.111	0.025	0.132
40		10	0.252	0.316	0.246	0.318
	4. ARITHMETIC FUNDAMENTALS					
41	9. Problems. Section I.	1	0.870	0.230	0.824	0.279
42		** 2	0.823	0.265	0.767	0.328
43		** 3	0.912	0.207	0.805	0.344
44		** 4†	0.863	0.219	0.738	0.341
45		** 5	0.746	0.358	0.625	0.415
46		** 6	0.744	0.376	0.580	0.412
47		** 7†	0.518	0.362	0.371	0.396
48		8†	0.019	0.105	0.028	0.133
49		9†	0.554	0.290	0.562	0.352
50		** 10†	0.090	0.196	0.018	0.126

†Items deemed inappropriate for comparisons.
*More difficult for 1956 students by 0.05 or more.
**More difficult for 1977 students by 0.05 or more.

TABLE 30

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1782	N=1724	N=3506	N=2201	N=2147	N=4348
SCORE	M	F	BOTH	M	F	BOTH
0					1	1
1					0	0
2				1	1	2
3				0	2	2
4				2	2	4
5				2	3	5
6				1	0	1
7		1	1	3	0	3
8		0	0	0	1	1
9		2	2	1	1	2
10	2	1	3	3	0	3
11	0	0	0	3	0	3
12	2	0	2	6	1	7
13	5	1	6	0	4	4
14	4	1	5	1	6	7
15	3	3	6	6	4	10
16	7	2	9	8	5	13
17	7	8	15	14	11	25
18	9	7	16	19	13	32
19	13	2	15	21	17	38
20	11	8	19	30	18	48
21	24	13	37	40	36	76
22	26	15	41	57	43	100
23	20	36	56	73	48	121
24	57	33	90	92	61	153
25	54	56	110	110	103	213
26	58	57	115	108	120	228

TABLE 30 continued
CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS
DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1782	N=1724	N=3506	N=2201	N=2147	N=4348
SCORE	M	F	BOTH	M	F	BOTH
27	107	84	191	150	146	296
28	124	107	231	159	162	321
29	150	135	285	169	177	346
30	178	205	383	214	224	438
31	218	214	432	204	181	385
32	217	220	437	184	195	379
33	174	228	402	201	215	416
34	158	168	326	147	170	317
35	103	77	180	112	110	222
36	39	35	74	50	51	101
37	9	5	14	8	14	22
38	3		3	2	1	3

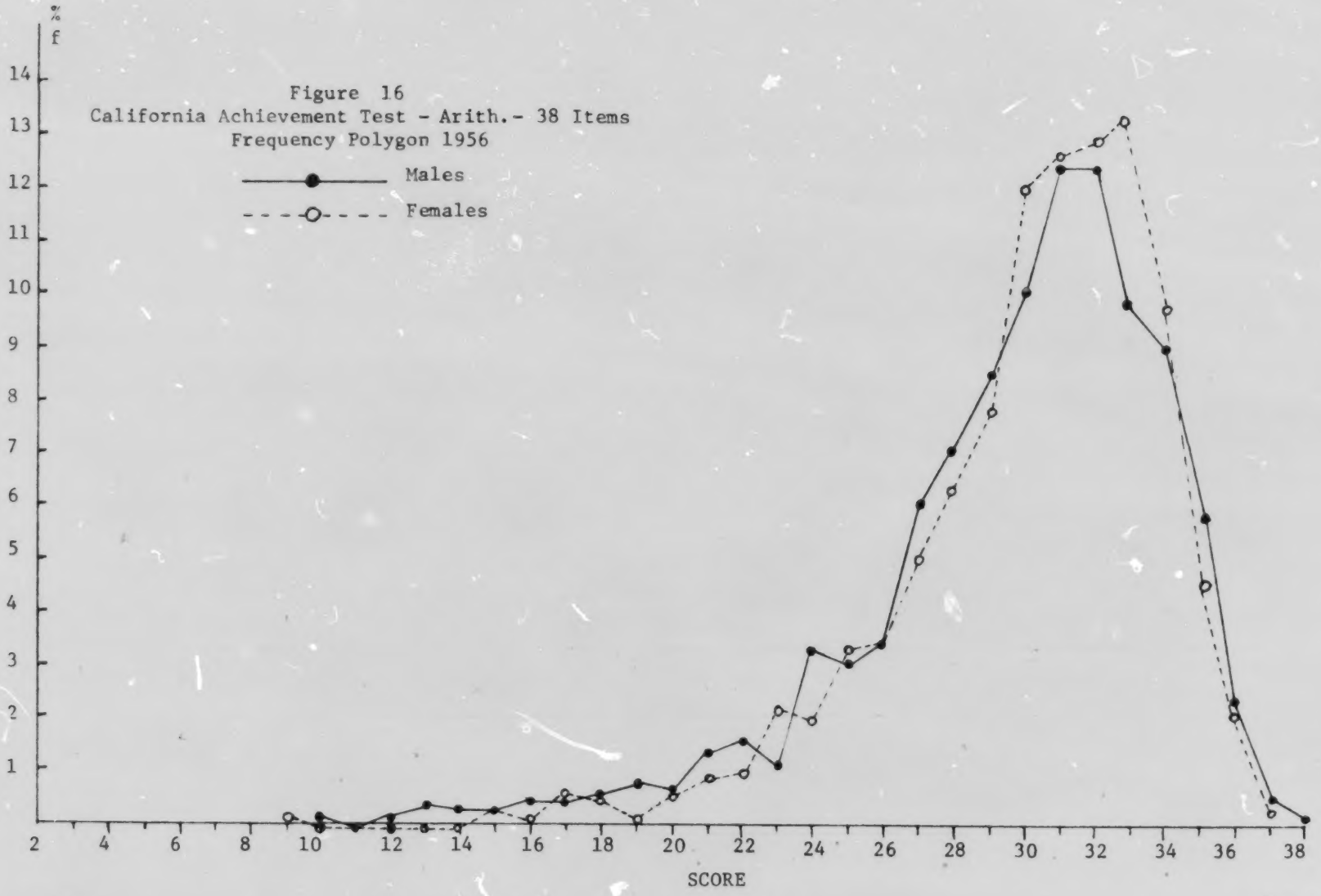
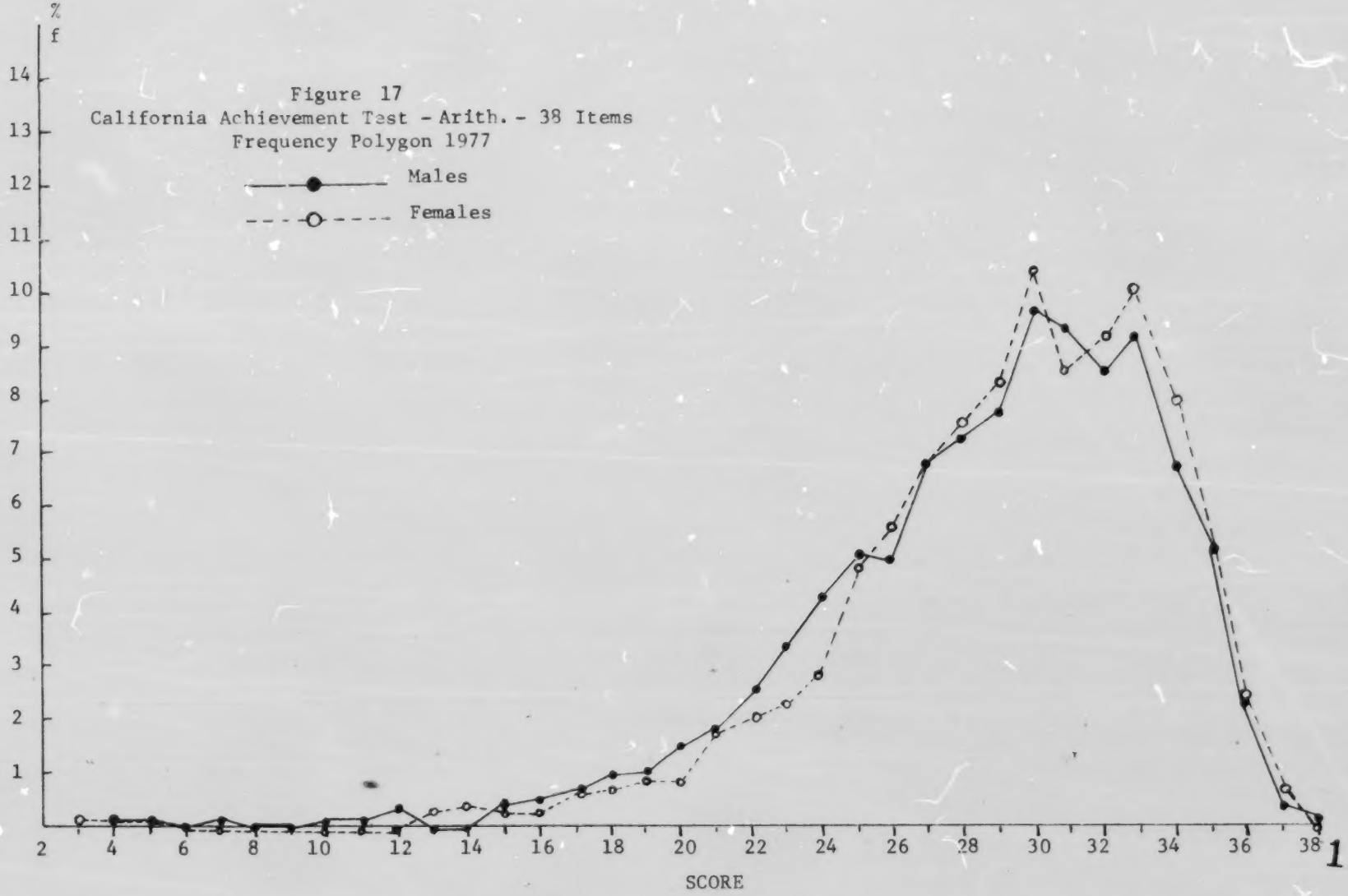


Figure 16
California Achievement Test - Arith.- 38 Items
Frequency Polygon 1956

Males

Females

Figure 17
California Achievement Test - Arith. - 38 Items
Frequency Polygon 1977



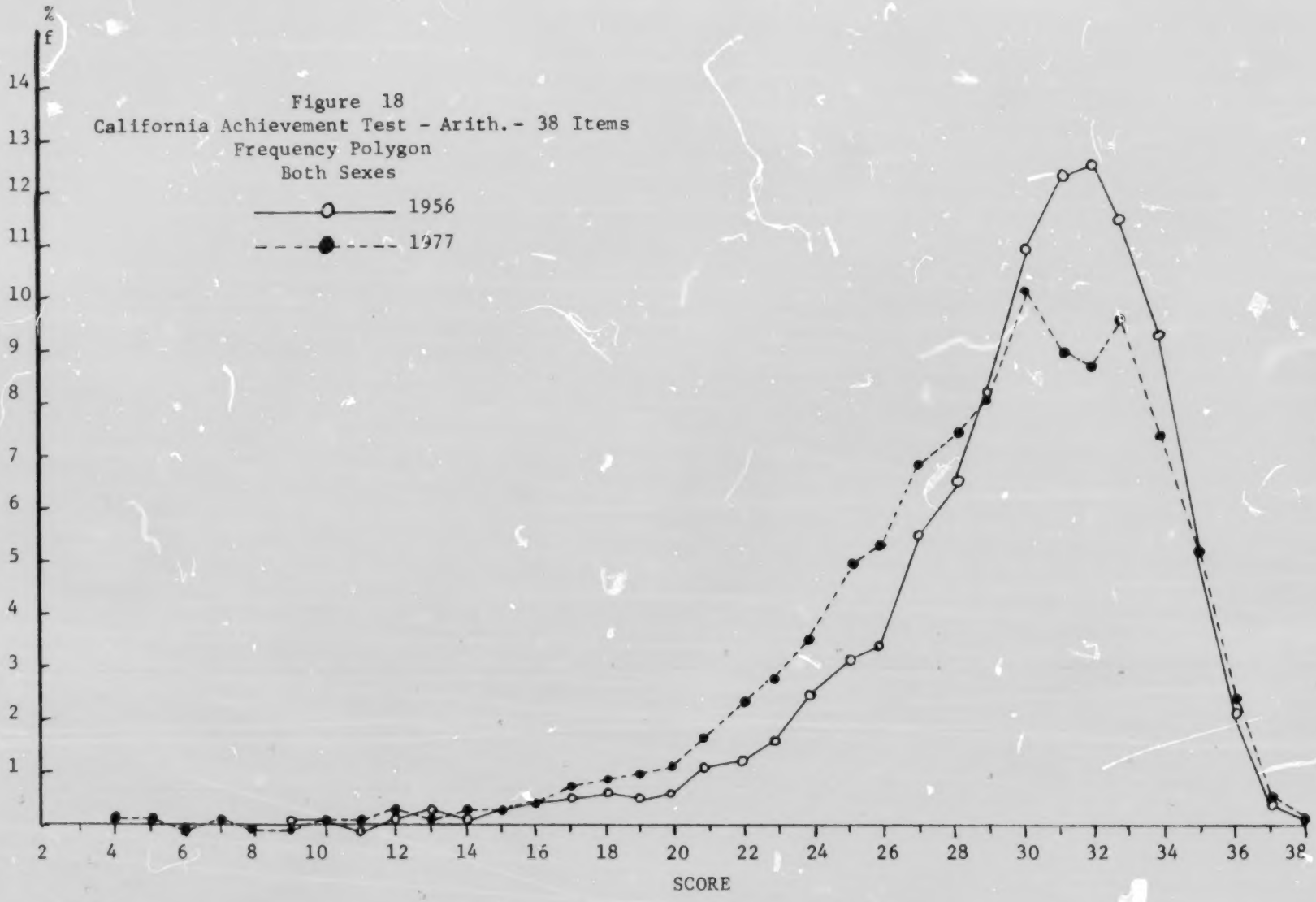


Figure 18
California Achievement Test - Arith.- 38 Items
Frequency Polygon
Both Sexes

TABLE 31

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS

ITEM ANALYSIS 1956-1977 MALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1782 Diffic.	YEAR 1956 N=1782 Discrim.	YEAR 1977 N=2201 Diffic.	YEAR 1977 N=2201 Discrim.
	3. ARITHMETIC REASONING					
1	1. Number and Sequence. Section A.	1	0.989	0.103	0.991	0.214
2		2	0.992	0.100	0.987	0.191
3		3	0.994	0.051	0.973	0.129
4		4	0.993	0.044	0.989	0.157
5		5	0.810	0.235	0.831	0.274
6	2. Money. Section B.	** 1	0.971	0.239	0.915	0.340
7		2	0.977	0.246	0.932	0.322
8		** 3	0.941	0.312	0.880	0.363
9		** 4	0.888	0.330	0.566	0.381
10		** 5	0.732	0.367	0.443	0.399
11	3. Number and Time. Section C.	* 1	0.901	0.352	0.952	0.343
12		2	0.910	0.421	0.943	0.347
13		3	0.977	0.138	0.970	0.244
14		4	0.536	0.247	0.533	0.275
15		5	0.891	0.422	0.876	0.380
16		6	0.907	0.413	0.900	0.376
17		7	0.903	0.445	0.900	0.395
18	4. Signs and Symbols. Section D.	** 1	0.951	0.286	0.862	0.338
19		** 2	0.932	0.247	0.841	0.348
20		3	0.947	0.203	0.981	0.162
21		* 4	0.770	0.243	0.937	0.239
22		* 5	0.870	0.288	0.946	0.266
23		6	0.553	0.221	0.587	0.259
24		7	0.624	0.240	0.654	0.311
25		8	0.940	0.343	0.940	0.363
26		9	0.919	0.385	0.915	0.397

TABLE 31 continued

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS

ITEM ANALYSIS 1956-1977 MALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1782		YEAR 1977 N=2201	
			Diffic.	Discrim.	Diffic.	Discrim.
27	5. Problems. Section E.	1	0.869	0.244	0.872	0.282
28		2	0.882	0.298	0.871	0.305
29		6	0.627	0.341	0.589	0.377
30		7	0.038	0.108	0.065	0.147
31		* 8	0.261	0.306	0.335	0.279
32		9	0.016	0.123	0.024	0.110
33		10	0.274	0.317	0.263	0.313
	4. ARITHMETIC FUNDAMENTALS					
34	9. Problems. Section I.	1	0.859	0.240	0.816	0.265
35		** 2	0.813	0.258	0.748	0.338
36		** 3	0.907	0.186	0.776	0.309
37		** 5	0.750	0.322	0.605	0.408
38		** 6	0.727	0.309	0.549	0.395

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 32

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS

ITEM ANALYSIS 1956-1977 FEMALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1724 Diffic.	YEAR 1956 N=1724 Discrim.	YEAR 1977 N=2147 Diffic.	YEAR 1977 N=2147 Discrim.
	3. ARITHMETIC REASONING					
1	1. Number and Sequence. Section A.	1	0.997	0.055	0.988	0.300
2		2	0.995	0.063	0.987	0.320
3		3	0.997	0.092	0.972	0.217
4		4	0.997	0.042	0.986	0.301
5		5	0.858	0.243	0.845	0.271
6	2. Money. Section B.	** 1	0.973	0.254	0.916	0.341
7		2	0.968	0.310	0.927	0.369
8		** 3	0.912	0.328	0.855	0.392
9		** 4	0.912	0.321	0.636	0.424
10		** 5	0.765	0.384	0.485	0.429
11	3. Number and Time. Section C.	1	0.937	0.266	0.966	0.332
12		2	0.939	0.336	0.949	0.312
13		3	0.981	0.153	0.976	0.298
14		4	0.510	0.297	0.529	0.282
15		5	0.926	0.366	0.895	0.346
16		6	0.940	0.360	0.918	0.351
17		7	0.940	0.330	0.918	0.349
18	4. Signs and Symbols. Section D.	** 1	0.961	0.208	0.897	0.370
19		** 2	0.949	0.143	0.874	0.370
20		3	0.958	0.205	0.980	0.232
21		* 4	0.782	0.284	0.927	0.248
22		* 5	0.844	0.291	0.939	0.320
23		* 6	0.531	0.155	0.585	0.231
24		7	0.642	0.194	0.659	0.302
25		8	0.964	0.331	0.949	0.367
26		9	0.938	0.353	0.921	0.377

TABLE 32 continued
CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS
ITEM ANALYSIS 1956-1977 FEMALE

	TEST AND SUBTEST	ITEM	YEAR 1956 N=1724		YEAR 1977 N=2147	
			Diffic.	Discrim.	Diffic.	Discrim.
27	5. Problems. Section E.	1	0.908	0.255	0.890	0.225
28		2	0.933	0.263	0.899	0.246
29		6	0.623	0.320	0.611	0.353
30		7	0.039	0.101	0.060	0.086
31		* 8	0.200	0.244	0.302	0.298
32		9	0.016	0.089	0.026	0.139
33		10	0.229	0.269	0.229	0.280
	4. ARITHMETIC FUNDAMENTALS					
34	9. Problems. Section I.	1	0.882	0.226	0.833	0.280
35		2	0.833	0.248	0.786	0.293
36		** 3	0.917	0.206	0.834	0.289
37		** 5	0.752	0.347	0.646	0.343
38		** 6	0.762	0.381	0.612	0.333

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 33

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS

ITEM ANALYSIS 1956-1977 BOTH SEXES

	TEST AND SUBTEST	ITEM	YEAR 1956 N=3506		YEAR 1977 N=4348	
			Diffic.	Discrim.	Diffic.	Discrim.
	3. ARITHMETIC REASONING					
1	1. Number and Sequence. Section A.	1	0.993	0.087	0.990	0.257
2		2	0.993	0.086	0.987	0.253
3		3	0.995	0.068	0.973	0.172
4		4	0.995	0.044	0.988	0.228
5		5	0.834	0.240	0.838	0.273
6	2. Money. Section B.	** 1	0.972	0.246	0.915	0.340
7		2	0.973	0.274	0.929	0.344
8		** 3	0.926	0.313	0.868	0.375
9		** 4	0.900	0.327	0.601	0.403
10		** 5	0.748	0.376	0.463	0.414
11	3. Number and Time. Section C.	1	0.919	0.318	0.959	0.338
12		2	0.924	0.387	0.946	0.331
13		3	0.979	0.145	0.973	0.269
14		4	0.523	0.269	0.531	0.277
15		5	0.908	0.400	0.886	0.365
16		6	0.924	0.392	0.909	0.365
17		7	0.922	0.399	0.909	0.374
18	4. Signs and Symbols. Section D.	** 1	0.956	0.252	0.879	0.354
19		** 2	0.940	0.204	0.857	0.359
20		3	0.952	0.205	0.980	0.196
21		* 4	0.776	0.262	0.932	0.242
22		* 5	0.857	0.286	0.943	0.291
23		6	0.542	0.188	0.586	0.245
24		7	0.633	0.219	0.656	0.306
25		8	0.952	0.339	0.945	0.366
26		9	0.928	0.372	0.918	0.388

TABLE 33 continued

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC - 38 ITEMS

ITEM ANALYSIS 1956-1977 BOTH SEXES

	TEST AND SUBTEST	ITEM	YEAR 1956 N=3506 Diffic.	YEAR 1956 N=3506 Discrim.	YEAR 1977 N=4348 Diffic.	YEAR 1977 N=4348 Discrim.
27	5. Problems. Section E.	1	0.888	0.251	0.881	0.256
28		2	0.907	0.286	0.885	0.279
29		6	0.625	0.330	0.600	0.366
30		7	0.038	0.105	0.063	0.117
31		* 8	0.231	0.274	0.319	0.286
32		9	0.016	0.107	0.025	0.124
33		10	0.252	0.292	0.246	0.295
	4. ARITHMETIC FUNDAMENTALS					
34	9. Problems. Section I.	1	0.870	0.235	0.824	0.273
35		** 2	0.823	0.254	0.767	0.318
36		** 3	0.912	0.196	0.805	0.301
37		** 5	0.746	0.334	0.625	0.378
38		** 6	0.744	0.342	0.580	0.367

* More difficult for 1956 students by 0.05 or more

** More difficult for 1977 students by 0.05 or more

TABLE 34

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

COMPARISON OF SUBTEST SCORES, MALES, 68 ITEMS

SUBTESTS	ITEMS	1956 N=1782 Mean / S.D.	1977 N=2201 Mean / S.D.
A. Number and Sequence	5	4.78 0.46	4.77 0.53
B. Money	5	4.51 0.83	3.73 1.26
C. Number and Time	7	6.03 1.32	6.08 1.28
D. Signs and Symbols	9	7.51 1.44	7.66 1.52
E. Problems	7	2.97 1.29	3.02 1.36
Arithmetic Reasoning (A + B + C + D + E)	33	25.80	25.26
F. Addition Combinations	10	9.65 0.89	9.52 1.25
G. Subtraction Combinations	10	9.43 1.08	9.07 1.63
H. Multiplication Combinations	10	6.85 1.55	7.71 2.22
I. Problems	5	4.05 1.18	3.51 1.55
Arithmetic Fundamentals (F + G + H + I)	35	29.98	29.81
TOTAL ARITHMETIC	68	55.78	55.07

TABLE 35

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

COMPARISON OF SUBTEST SCORES, FEMALES, 68 ITEMS

SUBTESTS	ITEMS	1956 N=1724 Mean S.D.	1977 N=2146 Mean S.D.
A. Number and Sequence	5	4.84 0.39	4.78 0.58
B. Money	5	4.53 0.82	3.82 1.28
C. Number and Time	7	6.17 1.08	6.15 1.15
D. Signs and Symbols	9	7.57 1.30	7.73 1.49
E. Problems	7	2.95 1.16	3.02 1.29
Arithmetic Reasoning (A + B + C + D + E)	33	26.06	25.50
F. Addition Combinations	10	9.67 0.92	9.68 0.88
G. Subtraction Combinations	10	9.47 1.04	9.23 1.39
H. Multiplication Combinations	10	6.93 1.47	7.98 1.96
I. Problems	5	4.15 1.15	3.72 1.45
Arithmetic Fundamentals (F + G + H + I)	35	30.22	30.61
TOTAL ARITHMETIC	68	56.28	56.11

TABLE 36

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

COMPARISON OF SUBTEST SCORES, BOTH SEXES, 68 ITEMS

SUBTESTS	ITEMS	1956 N=3506 Mean / S.D.	1977 N=4347 Mean / S.D.
A. Number and Sequence	5	4.81 0.43	4.77 0.56
B. Money	5	4.52 0.82	3.78 1.27
C. Number and Time	7	6.10 1.21	6.11 1.21
D. Signs and Symbols	9	7.54 1.37	7.70 1.50
E. Problems	7	2.96 1.23	3.02 1.32
Arithmetic Reasoning (A + B + C + D + E)	33	25.93	25.38
F. Addition Combinations	10	9.66 0.91	9.60 1.08
G. Subtraction Combinations	10	9.45 1.06	9.15 1.52
H. Multiplication Combinations	10	6.89 1.51	7.84 2.10
I. Problems	5	4.09 1.17	3.61 1.50
Arithmetic Fundamentals (F + G + H + I)	35	30.09	30.20
TOTAL ARITHMETIC	68	56.02	55.58

TABLE 37

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

COMPARISON OF SUBTEST SCORES, MALES, 80 ITEMS

SUBTESTS	ITEMS	1956 N=1782 Mean S.D.	1977 N=2201 Mean S.D.
A. Number and Sequence	5	4.78 0.46	4.77 0.53
B. Money	5	4.51 0.83	3.73 1.26
C. Number and Time	10	8.21 1.97	7.38 1.87
D. Signs and Symbols	10	8.30 1.66	8.49 1.76
E. Problems	10	5.38 1.83	5.32 1.95
Arithmetic Reasoning (A + B + C + D + E)	40	31.18	29.69
F. Addition Combinations	10	9.65 0.89	9.52 1.27
G. Subtraction Combinations	10	9.43 1.08	9.07 1.63
H. Multiplication Combinations	10	6.85 1.55	7.71 2.22
I. Problems	10	6.09 1.87	5.15 2.36
Arithmetic Fundamentals (F + G + H + I)	40	32.02	31.45
TOTAL ARITHMETIC	80	63.20	61.14

TABLE 38

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

COMPARISON OF SUBTEST SCORES, FEMALES, 80 ITEMS

SUBTESTS	ITEMS	1956 N=1724 Mean / S.D.	1977 N=2146 Mean / S.D.
A. Number and Sequence	5	4.84 0.39	4.78 0.58
B. Money	5	4.53 0.82	3.82 1.28
C. Number and Time	10	8.46 1.66	7.49 1.77
D. Signs and Symbols	10	8.39 1.52	8.55 1.72
E. Problems	10	5.34 1.68	5.30 1.81
Arithmetic Reasoning (A + B + C + D + E)	40	31.56	29.94
F. Addition Combinations	10	9.67 0.92	9.68 0.88
G. Subtraction Combinations	10	9.47 1.04	9.23 1.39
H. Multiplication Combinations	10	6.93 1.47	7.98 1.96
I. Problems	10	6.19 1.82	5.51 2.17
Arithmetic Fundamentals (F + G + H + I)	40	32.26	32.40
TOTAL ARITHMETIC	80	63.82	62.34

TABLE 39

CALIFORNIA ACHIEVEMENT TEST - ARITHMETIC

COMPARISON OF SUBTEST SCORES, BOTH SEXES, 80 ITEMS

SUBTESTS	ITEMS	1956 N=3506 Mean S.D.	1977 N=4347 Mean S.D.
A. Number and Sequence	5	4.81 0.43	4.77 0.56
B. Money	5	4.52 0.82	3.78 1.27
C. Number and Time	10	8.33 1.83	7.44 1.82
D. Signs and Symbols	10	8.34 1.59	8.52 1.74
E. Problems	10	5.36 1.76	5.31 1.88
Arithmetic Reasoning (A + B + C + D + E)	40	31.36	29.82
F. Addition Combinations	10	9.66 0.91	9.60 1.08
G. Subtraction Combinations	10	9.45 1.06	9.15 1.52
H. Multiplication Combinations	10	6.89 1.51	7.84 2.10
I. Problems	10	6.14 1.85	5.33 2.27
Arithmetic Fundamentals (F + G + H + I)	40	32.14	31.92
TOTAL ARITHMETIC	80	63.50	61.74

CHAPTER IX

CALIFORNIA ACHIEVEMENT TEST - LANGUAGE

The test originally used in 1956 was copyright 1950 by the California Test Bureau and was reprinted and used in the 1977 replication. The language portion, with 40 items, was divided into two parts: Mechanics of English (Capitalization with 10 items and Punctuation with 5 items) and Spelling with 25 items. The Capitalization subtest provided a story and a poem. The task was to draw a line under each letter that should be a capital letter. The punctuation subtest provided the same story and poem. The tasks were to write in periods, commas, question marks, and quotation marks on the story. The 25-item spelling test consisted of the teacher reading a word, then saying a sentence which used the word, then the teacher again saying the word.

The test manual states that the Capitalization subtest "is designed to measure the extent to which the pupil knows how to use capital letters". The manual goes on to state: "It includes capitalization of the first words of sentences, first lines of poetry, names of persons, names of streets, and the first words of quotations". The reliability of this subtest is reported below.

The Punctuation subtest repeated the poem of the Capitalization subtest, but it is not to be punctuated - only the story required punctuation: two periods, one comma, one question mark, and quotation marks.

The manual states that twenty-five carefully selected words were used in the Spelling subtest. The words were scaled in order of difficulty and all appear in the first 500 words most frequently used in writing.

The reliability of the subtests, "determined by averaging the intercorrelations of the different forms of the subject tests. . . for a single grade range (grade 2)" is given as follows.

Mechanics of English	(15 items)	0.83
Spelling	(25 items)	0.85
Total Language	(40 items)	0.91

The validity of the subtests is commented on in the manual in these terms. "The selection of items, on which the validity depends, is simplified in this test because it measures some of the most tangible and easily identifiable objectives of the curriculum. . . . the fundamental skills or tools of learning are relatively similar in all areas. Many studies have been made of the individual test items in the various tests under a wide variety of conditions."

TABLE 40
CALIFORNIA ACHIEVEMENT TEST LANGUAGE (SPELLING) COMPARISONS

		1956	1977
Male	Number	1774	2216
	Mean	15.70	17.90
	S.D.	3.71	3.36
Female	Number	1721	2157
	Mean	16.63	18.72
	S.D.	3.28	2.99
Both Sexes	Number	3495	4373
	Mean	16.16	18.30
	S.D.	3.53	3.21

Because of the shortness of the Capitalization subtest (10 items) and even more serious shortness of the Punctuation subtest (5 items), and because of doubts about their objectivity in terms of scoring, distributions of scores and item analyses are not provided. However, Tables 41 and 42 compare scores on these two subtests for males 1956-1977, females 1956-1977, and both sexes 1956-1977.

For spelling, Table 40 provides basic data. For all subjects, the improvement in average score was 2.14 or 13.2%. Females spelled better than males both in 1956 (by 0.93 of a score or 5.9%) and in 1977 (by 0.82 of a score or 4.6%). The improvement in spelling scores for each sex and for both sexes (all subjects) over the 21 years is impressive.

Table 41 presents the basic comparisons by sex and year for Capitalization. It will be noted that for each sex, and for all subjects, the 1977 scores are lower than those of 1956.

TABLE 41
CALIFORNIA ACHIEVEMENT TEST LANGUAGE (CAPITALIZATION) COMPARISONS

		1956	1977
Male	Number	1774	2216
	Mean	5.53	4.58
	S.D.	2.75	2.07
Female	Number	1721	2156
	Mean	5.92	5.14
	S.D.	2.38	2.27
Sexes	Number	3495	4372
	Mean	5.72	4.95
	S.D.	2.58	2.20

Table 42 sets forth the comparisons for Punctuation by sex and year. As for Capitalization, for each sex, and for all subjects, the 1977 scores are slightly lower than those of 1956.

TABLE 42

CALIFORNIA ACHIEVEMENT TEST LANGUAGE (PUNCTUATION) COMPARISONS

		1956	1977
Male	Number	1774	2216
	Mean	2.38	2.06
	S.D.	1.95	1.82
Female	Number	1721	2156
	Mean	2.59	2.37
	S.D.	1.43	1.34
Both Sexes	Number	3495	4372
	Mean	2.49	2.21
	S.D.	1.72	1.61

The distribution of raw scores for the Spelling subtest is provided in Table 43, and is illustrated in Figures 19, 20, and 21. Tables 44, 45, and 46 provide data on the item analysis.

TABLE 43

CALIFORNIA ACHIEVEMENT TEST - LANGUAGE

DISTRIBUTION OF SCORES FOR SPELLING

	YEAR 1956			YEAR 1977		
	N=1774	N=1721	N=3495	N=2216	N=2157	N=4373
SCORE	M	F	BOTH	M	F	BOTH
1		1	1	1	1	2
2		0	0	1	0	1
3	5	0	5	1	1	2
4	2	2	4	2	1	3
5	12	5	17	5	2	7
6	11	3	14	5	3	8
7	18	13	31	6	5	11
8	38	20	58	13	3	16
9	48	23	71	14	9	23
10	46	30	76	17	10	27
11	78	33	111	38	15	53
12	75	46	121	41	31	72
13	94	78	172	76	28	104
14	127	116	243	101	63	164
15	168	162	330	114	109	223
16	201	193	394	192	139	331
17	251	239	490	279	193	472
18	207	250	457	269	288	557
19	166	198	364	270	297	567
20	103	153	256	268	327	595
21	60	94	154	205	269	474
22	48	41	89	184	216	400
23	14	18	32	101	129	230
24	2	3	5	10	14	24
25				3	4	7

Figure 19
California Achievement Test - Language (Spelling)
Frequency Polygon 1956

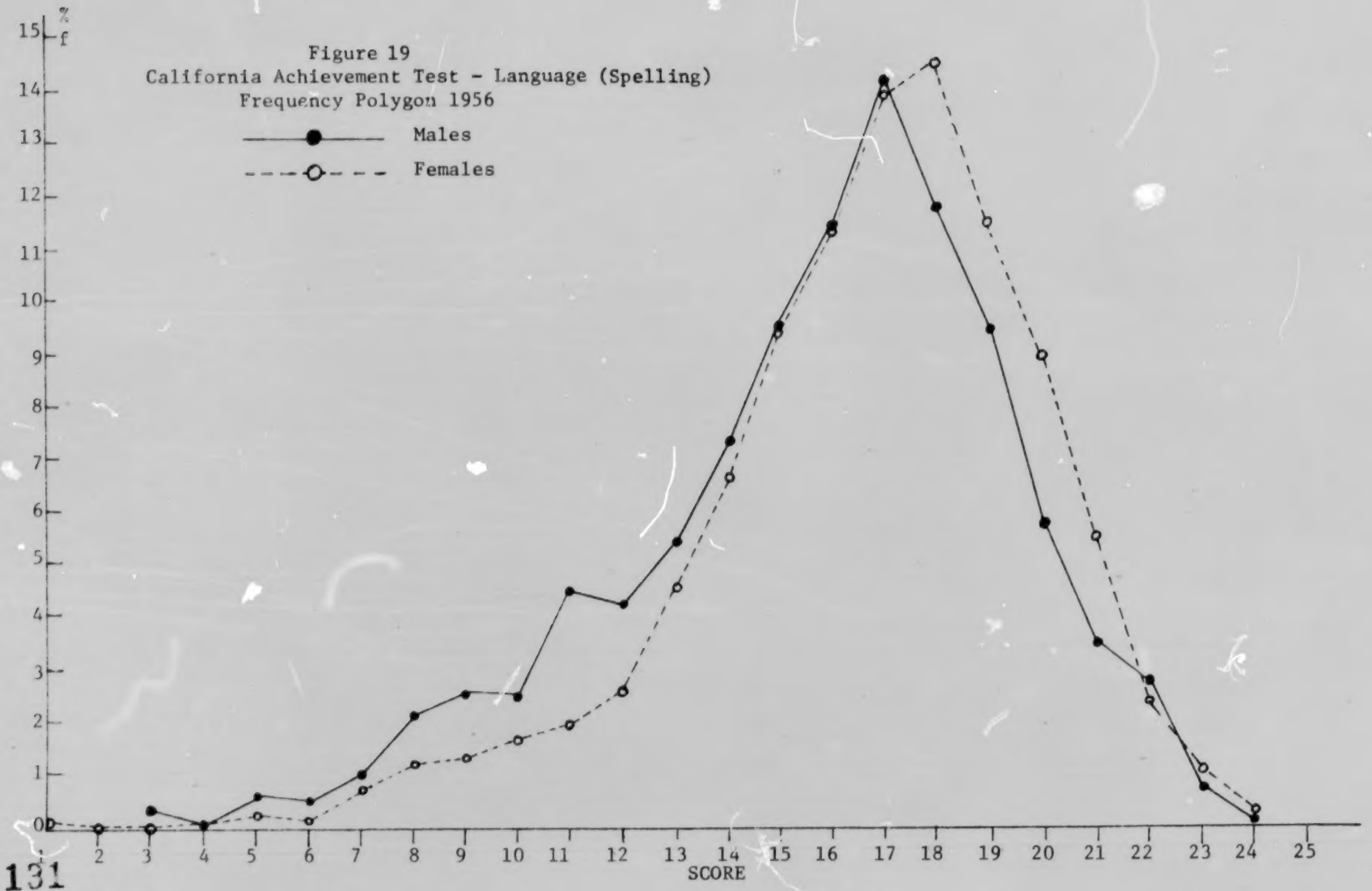
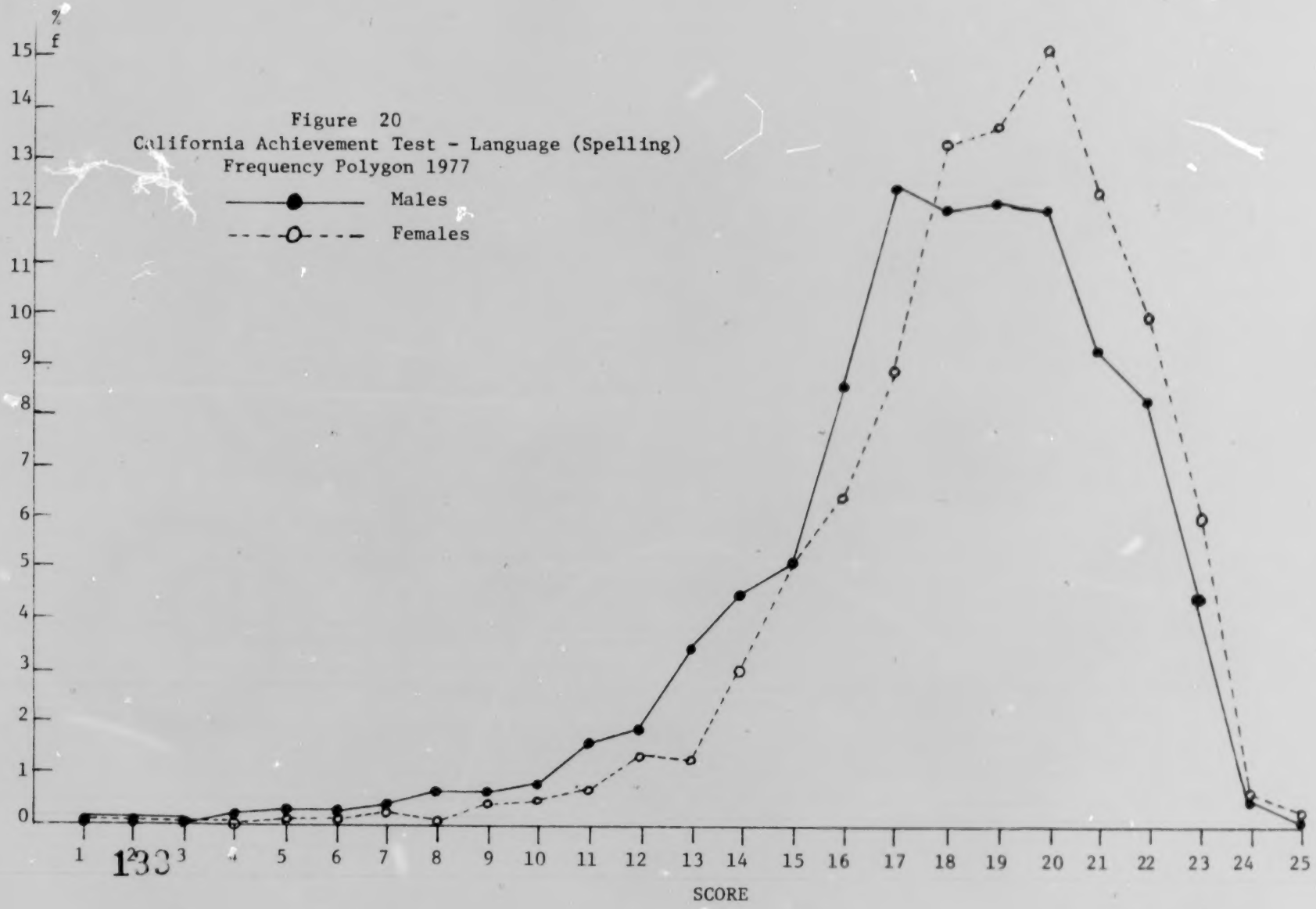


Figure 20
California Achievement Test - Language (Spelling)
Frequency Polygon 1977



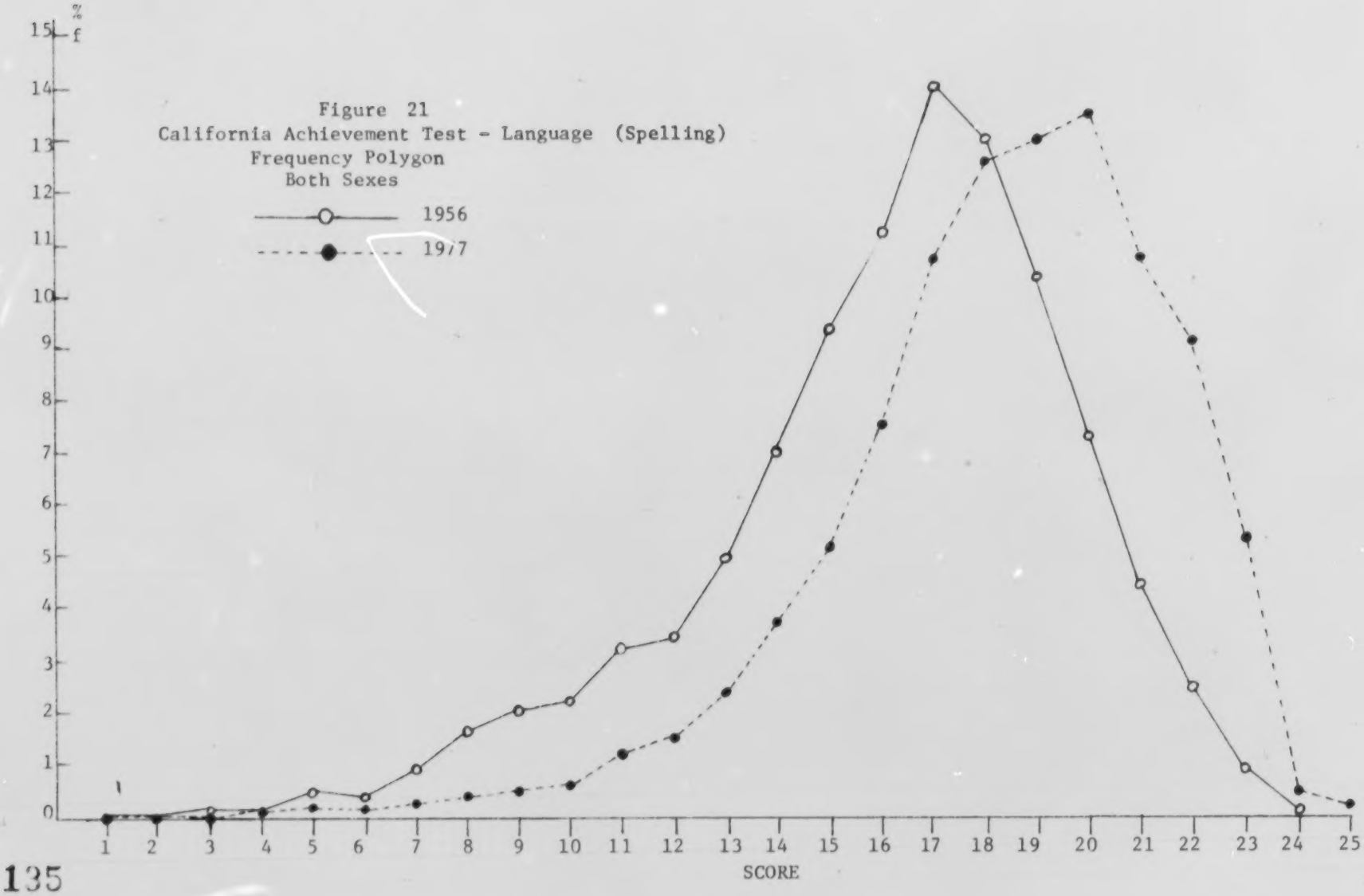


Figure 21
California Achievement Test - Language (Spelling)
Frequency Polygon
Both Sexes

TABLE 44

CALIFORNIA ACHIEVEMENT TEST - LANGUAGE

ITEM ANALYSIS FOR SPELLING 1956-1977 MALE

ITEM	YEAR 1956 N=1774		YEAR 1977 N=2216	
	Diffic.	Discrim.	Diffic.	Discrim.
1. do	0.975	0.243	0.981	0.167
2. is	0.993	0.153	0.994	0.142
3. run	0.981	0.208	0.991	0.155
4. good	0.989	0.160	0.991	0.132
5. my	0.968	0.214	0.986	0.222
6. wife	* 0.789	0.496	0.917	0.352
7. play	0.980	0.206	0.985	0.250
8. small	0.891	0.442	0.939	0.386
9. river	* 0.871	0.476	0.950	0.397
10. trust	* 0.688	0.511	0.917	0.384
11. south	0.855	0.467	0.878	0.456
12. block	* 0.804	0.456	0.901	0.380
13. ready	0.793	0.513	0.770	0.473
14. spend	* 0.822	0.444	0.910	0.334
15. wrote	* 0.335	0.397	0.602	0.447
16. little	0.913	0.291	0.900	0.385
17. clothing	* 0.656	0.509	0.813	0.411
18. proper	* 0.584	0.430	0.768	0.298
19. service	* 0.161	0.405	0.312	0.471
20. volume	* 0.135	0.342	0.397	0.453
21. mayor	* 0.162	0.359	0.325	0.405
22. difference	0.109	0.318	0.132	0.343
23. debate	* 0.237	0.271	0.529	0.371
24. necessary	0.007	0.073	0.011	0.121
25. ascending	0.006	0.102	0.004	0.076

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 45

CALIFORNIA ACHIEVEMENT TEST - LANGUAGE

ITEM ANALYSIS FOR SPELLING 1956-1977 FEMALE

ITEM	YEAR 1956 N=1721		YEAR 1977 N=2157	
	Diffic.	Discrim.	Diffic.	Discrim.
1. do	0.990	0.217	0.992	0.198
2. is	0.997	0.138	0.998	0.100
3. run	0.987	0.207	0.994	0.130
4. good	0.994	0.202	0.996	0.175
5. my	0.986	0.185	0.993	0.212
6. wife	* 0.871	0.446	0.944	0.352
7. play	0.985	0.185	0.993	0.196
8. small	0.942	0.377	0.969	0.354
9. river	* 0.919	0.439	0.974	0.346
10. trust	* 0.719	0.497	0.932	0.405
11. south	0.902	0.431	0.918	0.434
12. block	* 0.874	0.435	0.936	0.361
13. ready	0.893	0.474	0.865	0.466
14. spend	* 0.847	0.405	0.924	0.323
15. wrote	* 0.447	0.417	0.741	0.428
16. little	0.956	0.205	0.946	0.278
17. clothing	* 0.728	0.487	0.851	0.391
18. proper	* 0.626	0.404	0.800	0.257
19. service	* 0.180	0.384	0.365	0.442
20. volume	* 0.135	0.311	0.424	0.430
21. mayor	* 0.206	0.316	0.367	0.407
22. difference	0.148	0.311	0.188	0.359
23. debate	* 0.284	0.269	0.574	0.316
24. necessary	0.009	0.050	0.021	0.120
25. ascending	0.010	0.079	0.011	0.117

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 46

CALIFORNIA ACHIEVEMENT TEST - LANGUAGE

ITEM ANALYSIS FOR SPELLING 1956-1977 BOTH SEXES

	YEAR 1956 N=3495		YEAR 1977 N=4373	
ITEM	Diffic.	Discrim.	Diffic.	Discrim.
1. do	0.982	0.236	0.987	0.181
2. is	0.995	0.148	0.996	0.129
3. run	0.984	0.208	0.992	0.147
4. good	0.991	0.178	0.993	0.148
5. my	0.977	0.207	0.990	0.219
6. wife	* 0.829	0.481	0.931	0.355
7. play	0.983	0.198	0.989	0.230
8. small	0.916	0.421	0.954	0.376
9. river	* 0.895	0.464	0.962	0.379
10. trust	* 0.703	0.504	0.925	0.394
11. south	0.878	0.456	0.898	0.450
12. block	* 0.839	0.453	0.918	0.376
13. ready	0.842	0.503	0.817	0.476
14. spend	* 0.834	0.427	0.917	0.329
15. wrote	* 0.391	0.412	0.670	0.446
16. little	0.934	0.264	0.923	0.348
17. clothing	* 0.691	0.503	0.832	0.404
18. proper	* 0.605	0.419	0.783	0.282
19. service	* 0.170	0.393	0.338	0.458
20. volume	* 0.135	0.324	0.410	0.441
21. mayor	* 0.184	0.340	0.346	0.407
22. difference	0.128	0.316	0.160	0.353
23. debate	* 0.260	0.273	0.551	0.347
24. necessary	0.008	0.062	0.016	0.122
25. ascending	0.008	0.090	0.007	0.100

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

CHAPTER X

CALIFORNIA TEST OF MENTAL MATURITY

The test originally used in 1956 was copyright 1953 by the California Test Bureau and was reprinted for use in 1977. The test includes 98 items, of which 52 were designed as language factors [Inference with 12 items, Numerical Quantity (12), and Verbal Concepts (28)] and 46 as non-language factors [Sensing Right and Left (10), Manipulation of Areas (12), Similarities (12), and Number Series (12)]. Thus there were seven subtests.

The Manual states that none of the items in the California Short-Form Test of Mental Maturity were changed from the 1950 revision. The only changes were in norms. A split-halves Spearman-Brown reliability coefficient of 0.921 based on 700 pupils in grades 2 and 3 is reported.

The Manual reports that the original California Test of Mental Maturity was designed to measure most of the types of mental processes sampled by the Binet intelligence test. Validity is based on comparisons with the Stanford-Binet and the Manual states "that the total mental factors score has been found . . . to correlate as high or higher with the individual Stanford-Binet than any other one-period mental ability test". The Manual includes a strong defense of the value of the language and non-language sections.

As shown in Table 47, the Edmonton Grade III students of 1977 with an average score of 80.12 scored 5% higher than those of 1956 (average score 76.09). It will be noticed that the score for males

TABLE 47

CALIFORNIA SHORT-FORM TEST OF MENTAL MATURITY COMPARISONS

		1956	1977
Male	Number	1761	2207
	Mean	76.57	80.25
	S.D.	6.01	7.03
Female	Number	1682	2171
	Mean	75.59	79.98
	S.D.	6.32	6.82
Both Sexes	Number	3443	4378
	Mean	76.09	80.12
	S.D.	6.14	6.82

exceeded that for females in each year, 1956 and 1977. However, as Table 4 shows, the males were older in 1956 by 1.51 months, and in 1977 by 1.02 months. The test profile shows that at different points on the scale, one raw score related differently to mental age. At about scale midpoint, one raw score equated with about 1.8 months of mental age. Hence, the differences of chronological age found (1.51 months and 1.02 months) would account for approximately 0.5 to 1.0 points difference in California Mental Maturity scores, which was about what was found.

The significant fact is that for each sex, and therefore for all students, the mean score on the California Short-Form Test of Mental Maturity was substantially higher in 1977 than in 1956.

The distribution of scores is provided in Table 48 and is illustrated in Figures 22, 23, and 24. The distributions are approximately normal. The higher scores in 1977 appear to be related to a general shift to higher scores all along the scale.

Tables 49 , 50 , and 51 provide data on the item analyses. Each table divides the items into subtests which are given the names shown on the back page of the test. It will be observed that item 6 (which in the test shows a boy, standing on his head but facing forward) with instructions given orally by the examiner to "mark the left foot" discriminates negatively for the 1956 students and positively, but very low for the 1977 students. Item #66, which corresponds to item 8 in subtest 6, shows a similar result for males, and discriminates poorly for both sexes.

It is of considerable interest to observe differences in difficulty for the 1956 and 1977 students. Sex differences apart, Table 51 reveals that in general, the 1977 students scored much better on the difficult items, toward the end of each subtest. There were 24 items which were more difficult for the 1956 students by 0.05 or more. Eleven of these were in the subtests called by the testmakers "language factors" (tests 4, 6, 7) and 13 in the "non-language factors" (tests 1, 2, 3, 5). Test 3 (Similarities) was so easy for both groups that differences in difficulty are obscured. Further analysis reveals no obvious explanation for the superiority of the 1977 students other than that in general they scored higher on nearly all items. The test results as such provide no explanation for these higher scores.

Only one item (#73 or the third item in subtest 7) was more difficult for the 1977 students by 0.05 or more. This item showed a picture of a zebra, a wigwam, and a book. The instruction was to mark the wigwam. Presumably, this is a term which has been superceded by the term "tepee".

Differences by sex were few. Females in 1977 outperformed females in 1956 on item 40 by more than 0.05, but on this item, males did not exhibit such a difference. Three athletes are shown, and the instructions are "Jim runs faster than Charles but not as fast as Tom. Put a mark on Tom". On this item, there was very little difference between males in 1956 and in 1977. The difficulty for females in 1977 was 0.700 and for males was 0.726. However, the corresponding figures for 1956 were 0.630 and 0.712. This kind of narrowing of the difference by sex is found in items 70 and 93, while the opposite is shown in items 45 and 60. For each year, differences between sexes were revealed, but no table was prepared to highlight these differences. The reader can, however, compare the difficulty of each item for each year in Tables 49 and 50. Thus, on item 3, in 1956 the difficulty for males was 0.662 and for females was 0.609. The corresponding difficulties for 1977 were 0.676 and 0.622. Items 22, 40, 89, 90, 93, 94, and 96 reveal this kind of difference.

TABLE 48

CALIFORNIA MENTAL MATURITY DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1761	N=1682	N=3443	N=2207	N=2171	N=4378
SCORE	M	F	BOTH	M	F	BOTH
8	0	1	1			
9-27	0	0	0			
28	0	0	0	1	0	1
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	1	0	1
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	1	1
42	0	0	0	0	0	0
43	0	0	0	0	0	0
44	1	0	1	1	0	1
45	1	1	2	1	0	1
46	0	0	0	0	1	1
47	0	0	0	4	0	4
48	2	0	2	0	0	0
49	0	0	0	0	0	0
50	0	1	1	0	3	3
51	1	2	3	2	1	3
52	0	2	2	0	0	0
53	1	0	1	0	0	0

TABLE 48 continued

CALIFORNIA MENTAL MATURITY DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1761	N=1682	N=3443	N=2207	N=2171	N=4378
SCORE	M	F	BOTH	M	F	BOTH
54	0	0	0	1	0	1
55	2	3	5	1	0	1
56	2	0	2	1	0	1
57	2	6	8	4	0	4
58	3	5	8	4	2	6
59	1	4	5	3	5	8
60	3	7	10	3	3	6
61	11	9	20	5	7	12
62	0	7	7	1	4	5
63	6	7	13	8	8	16
64	11	12	23	8	9	17
65	24	18	42	9	12	21
66	23	31	54	14	14	28
67	20	27	47	20	16	36
68	30	46	76	19	38	57
69	42	54	96	26	29	55
70	66	58	124	30	42	72
71	61	77	138	45	44	89
72	75	89	164	54	55	109
73	107	90	197	60	53	113
74	108	110	218	70	84	154
75	104	105	209	78	95	173
76	142	129	271	105	92	197
77	111	119	230	117	103	220
78	108	127	235	109	97	206
79	123	100	223	121	130	251
80	106	86	192	109	119	228
81	110	83	193	139	133	272

TABLE 48 continued

CALIFORNIA MENTAL MATURITY DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1761	N=1682	N=3443	N=2207	N=2171	N=4378
SCORE	M	F	BOTH	M	F	BOTH
82	76	73	149	142	147	289
83	81	48	129	127	137	264
84	59	50	109	134	104	238
85	54	32	86	114	103	217
86	19	19	38	118	105	223
87	27	17	44	98	103	201
88	18	10	28	95	91	186
89	6	6	12	66	54	120
90	10	6	16	50	43	93
91	3	2	5	35	28	63
92	0	1	1	24	15	39
93	1	2	3	13	25	38
94				10	12	22
95				3	2	5
96				4	1	5
97				0	1	1

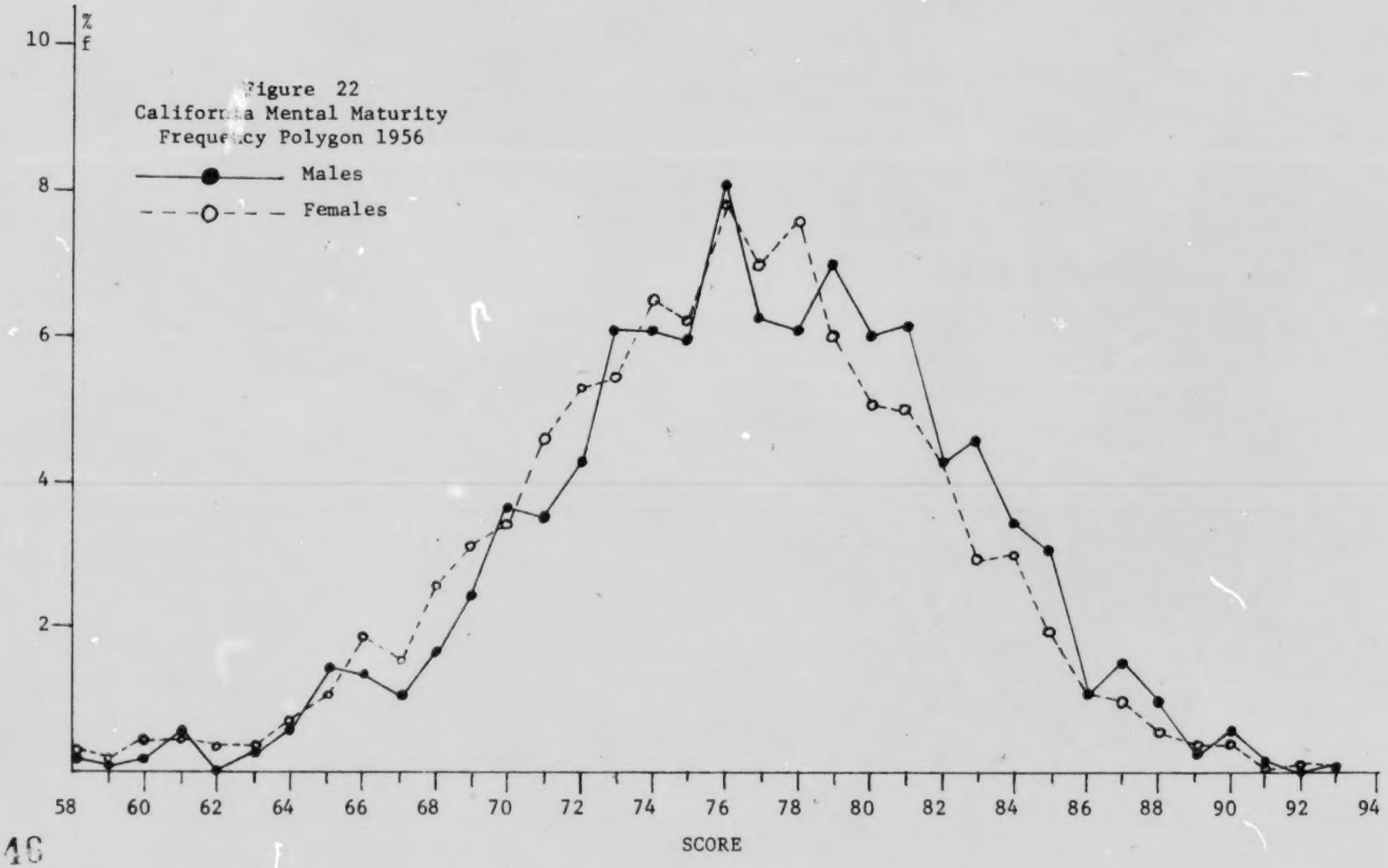
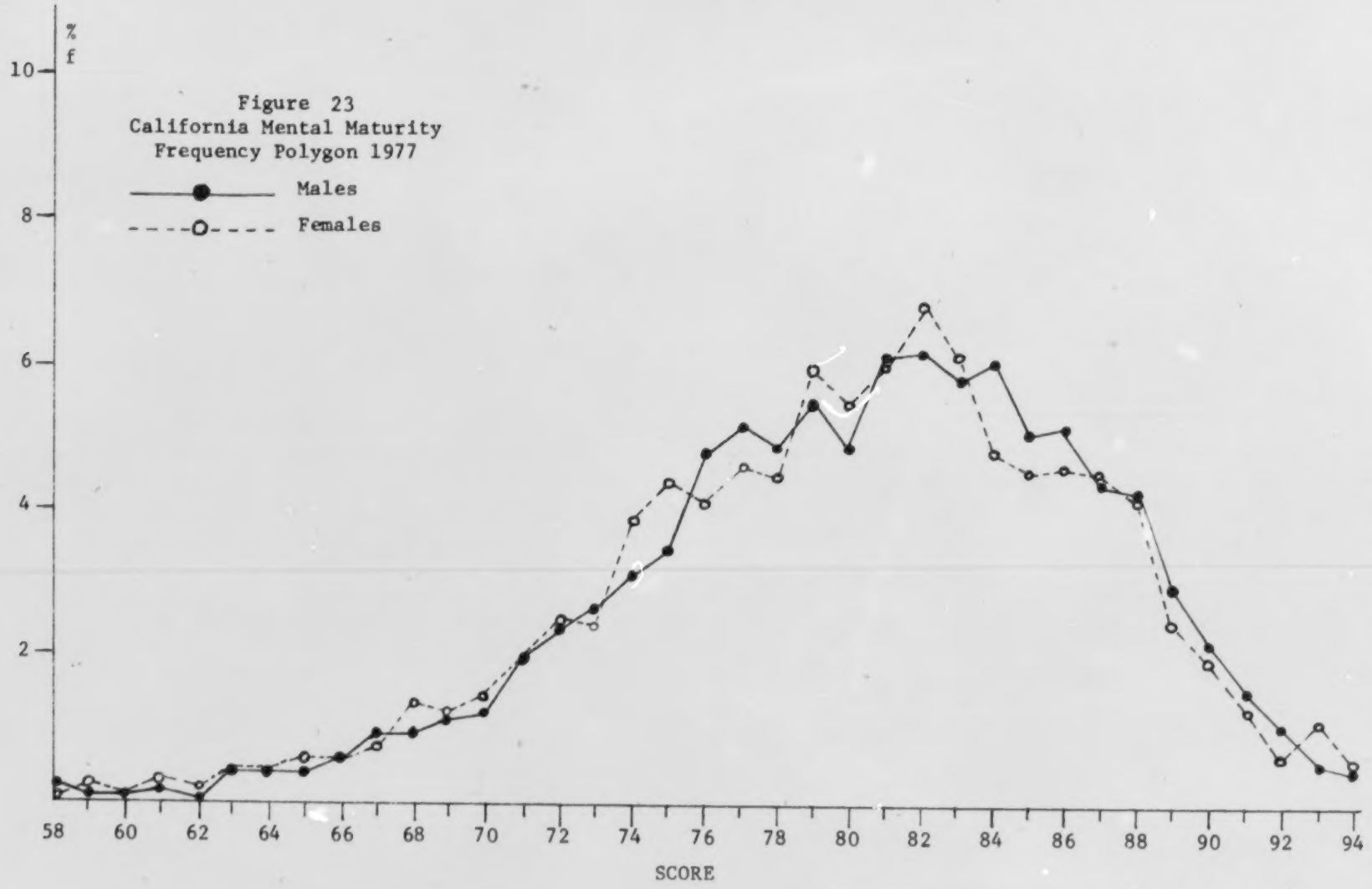


Figure 22
California Mental Maturity
Frequency Polygon 1956


%
f
10
8
6
4
2
Figure 23
California Mental Maturity
Frequency Polygon 1977
Males
Females
58
60
62
64
66
68
70
72
74
76
78
80
82
84
86
88
90
92
94
SCORE

119

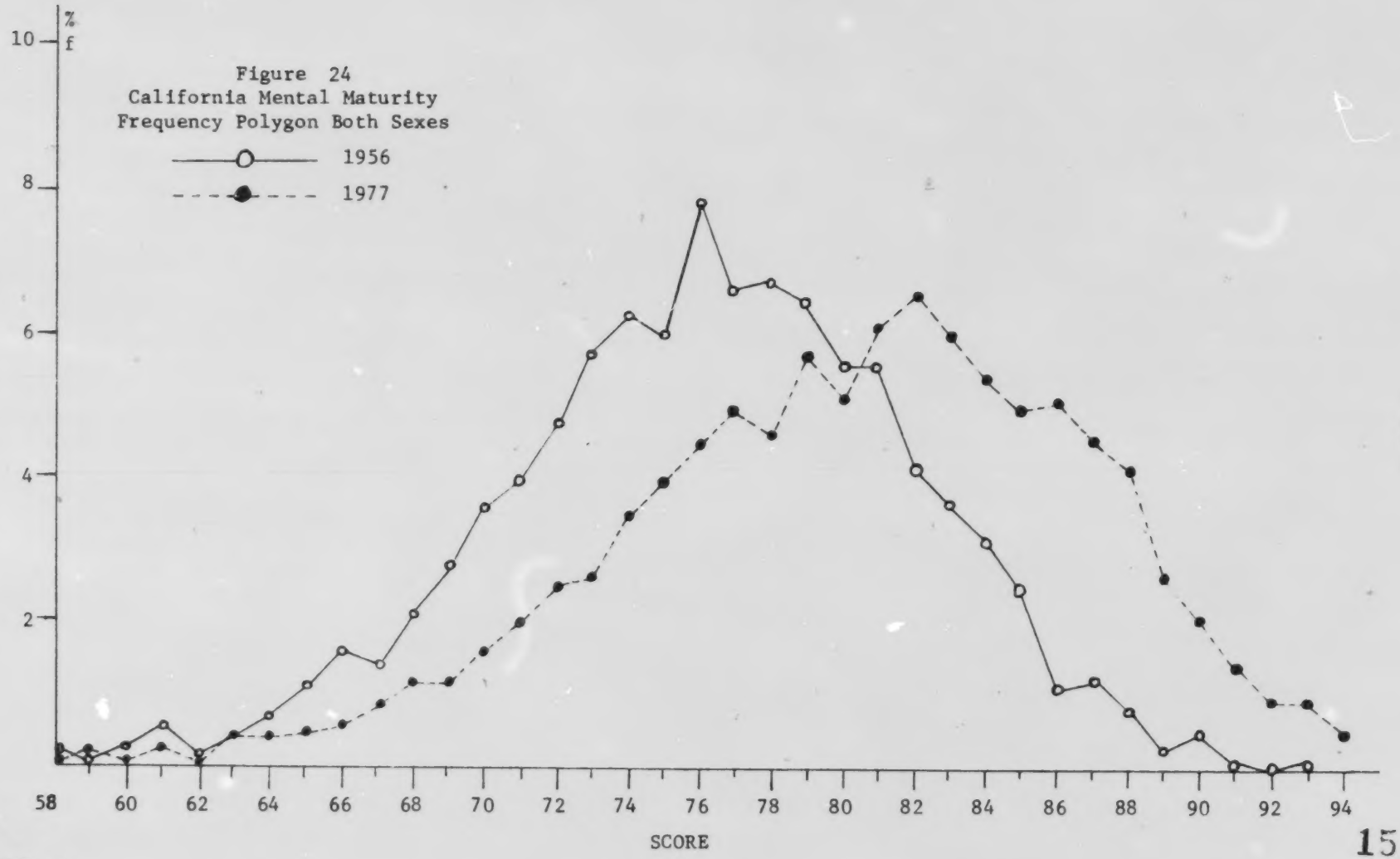


Figure 24
California Mental Maturity
Frequency Polygon Both Sexes

TABLE 49

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 MALE

Subtest and Item		YEAR 1956 N=1761		YEAR 1977 N=2207	
		Diffic.	Discrim.	Diffic.	Discrim.
Sensing Right and Left	1	0.624	0.287	0.651	0.277
	2	0.628	0.271	0.648	0.281
	3	0.662	0.217	0.676	0.172
	4	0.600	0.252	0.619	0.291
	5	0.728	0.136	0.725	0.153
	6	0.615	-0.017	0.596	0.041
	* 7	0.327	0.193	0.549	0.194
	* 8	0.422	0.246	0.675	0.282
	* 9	0.314	0.224	0.669	0.283
	*10	0.342	0.140	0.636	0.240
Manipulation of Areas	11	0.981	0.154	0.990	0.168
	12	0.984	0.160	0.986	0.193
	13	0.988	0.165	0.988	0.225
	14	0.986	0.208	0.991	0.234
	15	0.988	0.181	0.981	0.212
	16	0.964	0.195	0.984	0.242
	17	0.973	0.230	0.978	0.175
	18	0.970	0.223	0.983	0.200
	*19	0.842	0.239	0.919	0.237
	20	0.876	0.203	0.923	0.245
	21	0.888	0.170	0.927	0.216
	*22	0.315	0.093	0.438	0.204
Similarities	23	0.985	0.147	0.986	0.103
	24	0.993	0.219	0.995	0.076
	25	0.990	0.202	0.987	0.140
	26	0.955	0.196	0.976	0.101
	27	0.989	0.204	0.992	0.101

TABLE 49 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 MALE

Subtest and Item		YEAR 1956 N=1761		YEAR 1977 N=2207	
		Diffic.	Discrim.	Diffic.	Discrim.
	28	0.946	0.166	0.967	0.192
	29	0.972	0.187	0.977	0.187
	30	0.970	0.177	0.985	0.145
	31	0.943	0.228	0.974	0.157
	32	0.966	0.164	0.958	0.184
	33	0.950	0.187	0.979	0.178
	34	0.960	0.215	0.968	0.110
Inference	35	0.990	0.066	0.985	0.100
	36	0.890	0.155	0.929	0.155
	*37	0.890	0.089	0.967	0.140
	*38	0.257	0.018	0.324	0.094
	39	0.691	0.168	0.662	0.166
	40	0.712	0.082	0.726	0.120
	41	0.731	0.169	0.714	0.246
	*42	0.304	0.052	0.377	0.152
	*43	0.800	0.087	0.884	0.125
	44	0.849	0.073	0.862	0.145
	*45	0.654	0.183	0.713	0.303
	*46	0.606	0.110	0.714	0.165
Number Series	47	0.869	0.037	0.899	0.139
	48	0.982	0.040	0.969	0.122
	49	0.994	0.084	0.985	0.193
	*50	0.811	0.075	0.906	0.165
	51	0.760	0.079	0.754	0.112
	52	0.955	0.046	0.947	0.187
	*53	0.656	0.250	0.811	0.265
	*54	0.588	0.267	0.720	0.343

TABLE 49 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 MALE

Subtest and Item		YEAR 1956 N=1761		YEAR 1977 N=2207	
		Diffic.	Discrim.	Diffic.	Discrim.
	*55	0.355	0.130	0.515	0.263
	*56	0.126	0.175	0.306	0.328
	*57	0.198	0.140	0.411	0.330
	58	0.157	0.066	0.189	0.092
Numerical Quantity	59	0.947	0.196	0.944	0.245
	60	0.872	0.075	0.899	0.141
	61	0.972	0.131	0.971	0.175
	62	0.802	0.113	0.818	0.246
	63	0.814	0.220	0.817	0.220
	64	0.928	0.200	0.923	0.273
	65	0.148	0.165	0.104	0.124
	66	0.780	-0.044	0.825	0.076
	67	0.855	0.068	0.899	0.219
	68	0.928	0.104	0.908	0.216
	69	0.527	0.261	0.515	0.293
	70	0.365	0.178	0.357	0.212
Total Verbal Concepts	71	0.994	0.064	0.990	0.213
	72	0.991	0.141	0.991	0.221
	**73	0.977	0.152	0.887	0.157
	74	0.966	0.118	0.947	0.152
	75	0.994	0.153	0.988	0.219
	76	0.971	0.095	0.974	0.160
	77	0.952	0.100	0.903	0.185
	78	0.984	0.129	0.977	0.194
	79	0.988	0.137	0.990	0.200
	80	0.978	0.187	0.957	0.255
	81	0.991	0.172	0.983	0.220

TABLE 49 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 MALE

Subtest and Item	YEAR 1956 N=1761		YEAR 1977 N=2207	
	Diffic.	Discrim.	Diffic.	Discrim.
82	0.993	0.120	0.984	0.221
83	0.981	0.152	0.987	0.186
84	0.990	0.133	0.984	0.233
85	0.993	0.135	0.983	0.238
86	0.994	0.162	0.989	0.177
*87	0.501	0.054	0.611	0.159
88	0.986	0.123	0.983	0.252
*89	0.880	0.183	0.959	0.250
*90	0.698	0.183	0.922	0.277
91	0.980	0.124	0.981	0.253
92	0.930	0.139	0.905	0.173
93	0.655	0.169	0.670	0.126
*94	0.185	0.138	0.309	0.212
95	0.759	0.191	0.747	0.216
*96	0.435	0.148	0.643	0.186
*97	0.583	0.086	0.645	0.172
98	0.838	0.062	0.831	0.113

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 50

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 FEMALE

Subtest and Item		YEAR 1956 N=1682		YEAR 1977 N=2171	
		Diffic.	Discrim.	Diffic.	Discrim.
Sensing Right and Left	1	0.602	0.230	0.627	0.278
	2	0.597	0.240	0.627	0.301
	3	0.609	0.191	0.622	0.171
	4	0.568	0.247	0.596	0.291
	5	0.698	0.061	0.680	0.136
	6	0.631	-0.008	0.587	0.007
	* 7	0.290	0.167	0.506	0.175
	* 8	0.422	0.210	0.690	0.230
	* 9	0.281	0.206	0.693	0.227
	*10	0.331	0.177	0.642	0.209
Manipulation of Areas	11	0.979	0.180	0.986	0.149
	12	0.981	0.237	0.984	0.205
	13	0.986	0.245	0.987	0.152
	14	0.977	0.264	0.990	0.159
	15	0.982	0.227	0.978	0.189
	16	0.964	0.207	0.986	0.190
	17	0.972	0.219	0.982	0.171
	18	0.960	0.205	0.981	0.187
	*19	0.860	0.172	0.924	0.214
	*20	0.847	0.159	0.933	0.206
	21	0.894	0.164	0.936	0.203
	*22	0.266	0.060	0.400	0.197
Similarities	23	0.985	0.199	0.986	0.202
	24	0.986	0.228	0.992	0.175
	25	0.986	0.224	0.985	0.195
	26	0.920	0.195	0.948	0.143
	27	0.985	0.235	0.990	0.178

TABLE 50 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 FEMALE

Subtest and Item		YEAR 1956 N=1682		YEAR 1977 N=2171	
		Diffic.	Discrim.	Diffic.	Discrim.
	28	0.911	0.246	0.965	0.210
	29	0.965	0.242	0.981	0.194
	30	0.966	0.271	0.985	0.195
	31	0.951	0.289	0.971	0.236
	32	0.961	0.276	0.959	0.211
	33	0.928	0.264	0.970	0.180
	34	0.955	0.183	0.962	0.154
Inference	35	0.989	0.125	0.982	0.175
	36	0.896	0.183	0.920	0.193
	*37	0.853	0.201	0.968	0.114
	*38	0.225	0.047	0.310	0.058
	39	0.718	0.181	0.713	0.215
	*40	0.630	0.094	0.700	0.149
	41	0.687	0.182	0.730	0.293
	42	0.319	0.085	0.346	0.148
	*43	0.811	0.110	0.867	0.180
	44	0.856	0.115	0.865	0.166
	45	0.668	0.174	0.777	0.279
	*46	0.589	0.095	0.708	0.195
Number Series	47	0.904	0.165	0.915	0.123
	48	0.948	0.169	0.956	0.074
	49	0.993	0.159	0.988	0.128
	*50	0.853	0.077	0.921	0.094
	51	0.801	0.096	0.783	0.154
	52	0.957	0.157	0.949	0.196
	*53	0.690	0.210	0.841	0.253
	*54	0.570	0.258	0.720	0.339
	*55	0.364	0.158	0.531	0.263

TABLE 50 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 FEMALE

Subtest and Item		YEAR 1956 N=1682		YEAR 1977 N=2171	
		Diffic.	Discrim.	Diffic.	Discrim.
	*56	0.155	0.242	0.339	0.363
	*57	0.225	0.171	0.482	0.341
	58	0.153	0.000	0.183	0.113
Numerical Quantity	59	0.958	0.190	0.966	0.195
	*60	0.874	0.103	0.924	0.121
	61	0.976	0.170	0.978	0.162
	62	0.844	0.157	0.865	0.230
	63	0.782	0.262	0.776	0.251
	64	0.940	0.205	0.912	0.226
	65	0.102	0.122	0.089	0.153
	66	0.807	0.066	0.846	0.084
	67	0.888	0.082	0.902	0.177
	68	0.924	0.118	0.928	0.211
	69	0.492	0.260	0.512	0.332
	*70	0.380	0.184	0.433	0.235
Total Verbal Concepts	71	0.999	0.173	0.996	0.029
	72	0.994	0.131	0.998	0.008
	**73	0.983	0.180	0.900	0.145
	74	0.970	0.095	0.927	0.126
	75	0.998	0.173	0.993	0.055
	76	0.970	0.175	0.971	0.076
	77	0.929	0.087	0.890	0.115
	78	0.984	0.127	0.983	0.158
	79	0.992	0.101	0.992	0.132
	80	0.948	0.173	0.940	0.247
	81	0.989	0.138	0.984	0.151
	82	0.996	0.108	0.984	0.164
	83	0.986	0.109	0.988	0.127

TOTAL 50 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 FEMALE

Subtest and Item	YEAR 1956 N=1682		YEAR 1977 N=2171	
	Diffic.	Discrim.	Diffic.	Discrim.
84	0.992	0.194	0.982	0.149
85	0.990	0.188	0.986	0.176
86	0.995	0.109	0.992	0.077
*87	0.486	0.073	0.567	0.145
88	0.988	0.143	0.987	0.130
*89	0.780	0.171	0.945	0.209
*90	0.628	0.186	0.878	0.272
91	0.961	0.141	0.965	0.171
92	0.886	0.182	0.899	0.114
*93	0.581	0.159	0.652	0.172
*94	0.126	0.080	0.227	0.183
95	0.756	0.209	0.711	0.145
*96	0.257	0.147	0.507	0.179
*97	0.555	0.049	0.619	0.115
98	0.859	0.067	0.861	0.108

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 51

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977
BOTH SEXES

Subtest and Item		YEAR 1956 N=3443		YEAR 1977 N=4378	
		Diffic.	Discrim.	Diffic.	Discrim.
Sensing Right and Left	1	0.613	0.261	0.639	0.282
	2	0.613	0.259	0.638	0.295
	3	0.636	0.209	0.649	0.175
	4	0.584	0.253	0.608	0.296
	5	0.713	0.101	0.703	0.147
	6	0.623	-0.014	0.592	0.025
	* 7	0.309	0.184	0.528	0.188
	* 8	0.422	0.229	0.682	0.260
	* 9	0.298	0.219	0.681	0.259
	*10	0.337	0.160	0.639	0.228
Manipulation of Areas	11	0.980	0.169	0.988	0.160
	12	0.983	0.202	0.985	0.202
	13	0.987	0.208	0.987	0.192
	14	0.982	0.242	0.991	0.200
	15	0.985	0.209	0.980	0.203
	16	0.964	0.202	0.985	0.220
	17	0.973	0.226	0.980	0.176
	18	0.965	0.216	0.982	0.196
	*19	0.851	0.205	0.921	0.229
	*20	0.862	0.184	0.928	0.230
	21	0.891	0.167	0.931	0.213
	*22	0.291	0.081	0.419	0.204
Similarities	23	0.985	0.174	0.986	0.154
	24	0.990	0.225	0.994	0.131
	25	0.988	0.216	0.986	0.170
	26	0.938	0.200	0.962	0.126
	27	0.987	0.222	0.991	0.143

TABLE 51 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 BOTH

Subtest and Item		YEAR 1956 N=3443		YEAR 1977 N=4378	
		Diffic.	Discrim.	Diffic.	Discrim.
	28	0.929	0.215	0.966	0.204
	29	0.969	0.219	0.979	0.193
	30	0.968	0.227	0.985	0.172
	31	0.947	0.257	0.973	0.200
	32	0.964	0.224	0.959	0.200
	33	0.939	0.233	0.974	0.181
	34	0.958	0.201	0.965	0.135
Inference	35	0.990	0.098	0.984	0.140
	36	0.893	0.169	0.925	0.177
	*37	0.872	0.153	0.968	0.129
	*38	0.242	0.036	0.317	0.078
	39	0.704	0.173	0.687	0.191
	40	0.672	0.095	0.713	0.137
	41	0.710	0.180	0.722	0.273
	*42	0.311	0.067	0.362	0.153
	*43	0.805	0.098	0.876	0.155
	44	0.852	0.094	0.863	0.157
	*45	0.661	0.178	0.745	0.294
	*46	0.598	0.104	0.711	0.182
Number Series	47	0.886	0.092	0.907	0.133
	48	0.965	0.126	0.962	0.098
	49	0.994	0.123	0.987	0.165
	*50	0.832	0.071	0.914	0.133
	51	0.780	0.083	0.768	0.133
	52	0.956	0.101	0.948	0.194
	*53	0.673	0.228	0.826	0.262
	*54	0.579	0.265	0.720	0.346

TABLE 51 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 BOTH

Subtest and Item		YEAR 1956 N=3443		YEAR 1977 N=4378	
		Diffic.	Discrim.	Diffic.	Discrim
	*55	0.360	0.144	0.523	0.267
	*56	0.140	0.207	0.322	0.350
	*57	0.211	0.154	0.446	0.338
	58	0.155	0.034	0.186	0.104
Numerical Quantity	59	0.952	0.192	0.955	0.224
	60	0.873	0.089	0.912	0.133
	61	0.974	0.150	0.974	0.171
	62	0.823	0.130	0.842	0.240
	63	0.798	0.246	0.797	0.239
	64	0.934	0.201	0.918	0.253
	65	0.125	0.150	0.097	0.140
	66	0.793	0.007	0.835	0.080
	67	0.871	0.071	0.901	0.202
	68	0.926	0.113	0.918	0.216
	69	0.510	0.264	0.513	0.317
	70	0.372	0.181	0.395	0.224
Total Verbal Concepts	71	0.996	0.088	0.993	0.144
	72	0.993	0.135	0.994	0.146
	**73	0.980	0.163	0.894	0.153
	74	0.968	0.106	0.937	0.141
	75	0.996	0.151	0.990	0.151
	76	0.971	0.136	0.973	0.120
	77	0.940	0.097	0.897	0.152
	78	0.984	0.128	0.980	0.180
	79	0.990	0.119	0.991	0.171
	80	0.963	0.182	0.949	0.254
	81	0.990	0.156	0.984	0.190

TABLE 51 continued

CALIFORNIA MENTAL MATURITY ITEM ANALYSIS 1956-1977 BOTH

Subtest and Item	YEAR 1956 N=3443		YEAR 1977 N=4378	
	Diffic.	Discrim.	Diffic.	Discrim.
82	0.994	0.113	0.984	0.197
83	0.983	0.131	0.988	0.160
84	0.991	0.161	0.983	0.194
85	0.992	0.165	0.984	0.212
86	0.994	0.136	0.991	0.134
*87	0.493	0.065	0.589	0.155
88	0.987	0.133	0.985	0.199
89	0.831	0.185	0.952	0.232
*90	0.664	0.190	0.900	0.277
91	0.971	0.137	0.974	0.207
92	0.908	0.169	0.902	0.146
93	0.619	0.170	0.661	0.151
*94	0.156	0.117	0.268	0.202
95	0.757	0.202	0.729	0.184
*96	0.348	0.157	0.576	0.184
*97	0.570	0.070	0.632	0.146
98	0.848	0.062	0.846	0.111

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

CHAPTER XI

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B

All of the Edmonton Grade III students in 1956 took the original (1947) version of this test. The items have remained the same through eight reprintings, although in 1956 a revised order of problems and wrong choices was introduced. This order is used in Table 52. Because the test is commercially available, it is not included in the appendices.

In 1977 the version of the test labelled "1956, 1962" with identical items, was administered to approximately 60% (2838) of the approximately 4688 Grade III students in the Edmonton Public School system. Four samples, each with approximately 10% of the students, had been drawn as part of the Alberta study to take both the original and the latest version of other tests in order to equate these. The students in these four samples therefore wrote five tests without taking the Raven. To ensure that no student wrote more than five tests, the Raven Progressive Matrices was not administered to these students. The results on this test for 1977 were from approximately 60% of the Grade III students. However, to the extent that the four samples were representative, the remainder was also representative. Evidence on representativeness is provided in the report of the Alberta study mentioned.

The test manual ("Guide to using The Coloured Progressive Matrices Sets A, A_B, B") notes that the test is untimed, consists of 36 items in three subtests each with 12 items, and that each item presents a figure with a part missing along with six possible responses, one of which correctly completes the figure. Because words are not the vehicle of transmission of thought, the effect of language handicaps are minimized. However, the Guide goes on to observe the following:

> The scale as a whole can be described as a "test of observation and clear thinking". Each problem in the scale is really the "mother" or "source" of a system of thought, while the order in which the problems are presented provides the standard training in the method of working. Hence the name "Progressive Matrices". By itself, it is not a test of "general intelligence", and it is always a mistake to describe it as such. For this purpose it should be used in conjunction with a vocabulary test.

However, the Guide continually emphasises that high scores are dependent on mental development and intellectual maturity. Test norms, based on 608 Dumfries school children over 5 and under 11½ years of age show that for age 9, a score of 15 is at the 5th percentile, 16 is at the 10th, 19 is at the 25th, 22 is at the 50th,

TABLE 52
RAVEN PROGRESSIVE MATRICES COMPARISONS

		1956	1977
Male	Number	1836	1278
	Mean	25.45	27.31
	S.D.	5.03	5.55
Female	Number	1760	1299
	Mean	24.18	27.26
	S.D.	5.64	5.62
Both Sexes	Number	3596	2577
	Mean	24.83	27.29
	S.D.	5.37	5.58

26 is at the 75th, 28 is at the 90th, and 30 is at the 95th percentile. The mean age of Alberta Grade III students when tested was approximately 9 years (Table 4) and the mean score on the Raven Progressive Matrices (Table 52) for the 1956 students was 24.83 and for the 1977 students was 27.29. Obviously, compared with the 608 Dumfries students (the year of testing was not given, but was probably in the early 1950s), Edmonton students scored better.

Table 53 sets forth the distribution of scores and Tables 54, 55, and 56 the item analyses by male, female, and both sexes for 1956 and 1977. It can be observed from Table 53 that in 1956 males scored appreciably higher than females, but in 1977 this gap had narrowed. However, the important point is the relatively large increase in mean score from 1956 to 1977. The reader is left to conjure with various explanations.

TABLE 53

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1836	N=1760	N=3596	N=1278	N=1299	N=2577
SCORE	M	F	BOTH	M	F	BOTH
2				1	0	1
3				1	1	2
4				0	0	0
5				0	2	2
6				1	1	2
7				1	3	4
8				1	3	4
9		2	2	1	1	2
10	1	1	2	3	1	4
11	0	2	2	3	1	4
12	5	22	27	5	8	13
13	16	30	46	12	8	20
14	17	44	61	10	11	21
15	28	36	64	8	8	16
16	26	48	74	11	10	21
17	37	56	93	11	25	36
18	45	73	118	23	22	45
19	58	83	141	43	30	73
20	70	71	141	24	27	51
21	96	85	181	37	34	71
22	101	115	216	38	39	77
23	111	93	204	54	64	118
24	132	121	253	57	55	112
25	151	126	277	64	63	127
26	158	111	269	76	81	157
27	129	117	246	89	81	170
28	129	89	218	79	105	184

TABLE 53 continued

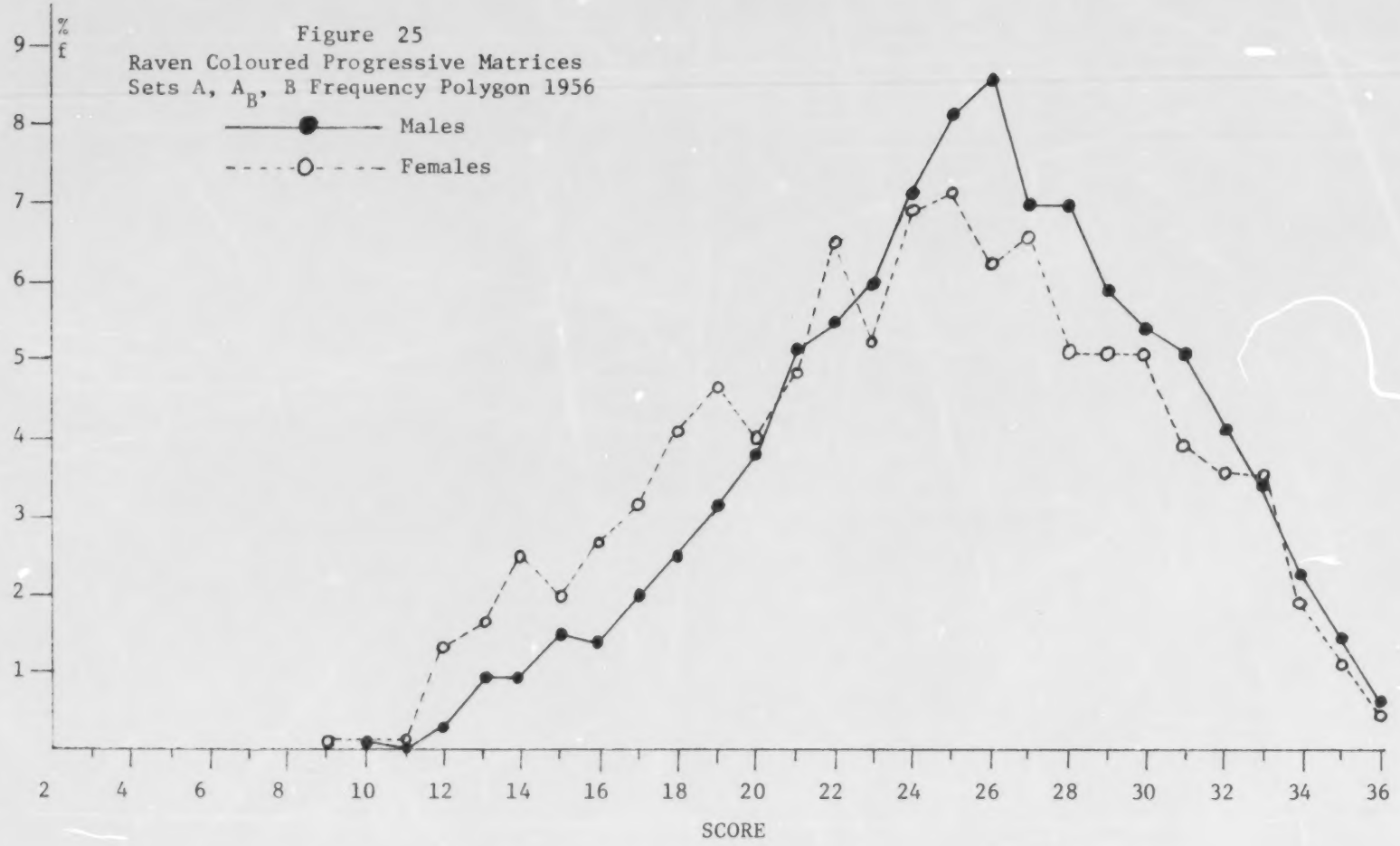
RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

DISTRIBUTION OF SCORES

	YEAR 1956			YEAR 1977		
	N=1836	N=1760	N=3596	N=1278	N=1299	N=2577
SCORE	M	F	BOTH	M	F	BOTH
29	108	90	198	105	82	187
30	100	90	190	91	91	182
31	94	69	163	103	113	216
32	77	63	140	105	97	202
33	63	61	124	82	95	177
34	43	33	76	78	84	162
35	28	21	49	42	31	73
36	13	8	21	19	22	41

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

Figure 25
Raven Coloured Progressive Matrices
Sets A, A_B, B Frequency Polygon 1956



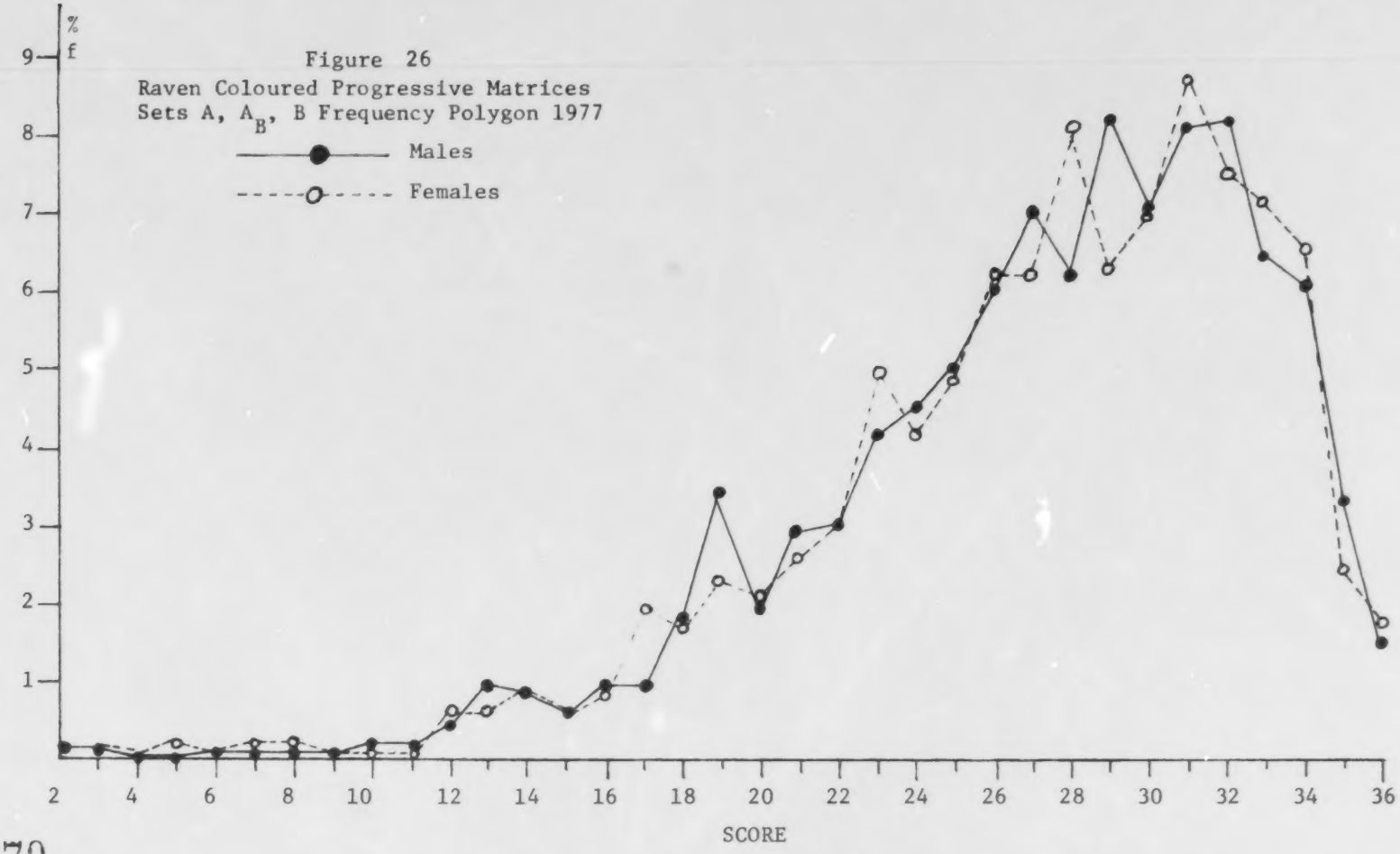


Figure 26
Raven Coloured Progressive Matrices
Sets A, A_B, B Frequency Polygon 1977

Figure 27
Raven Coloured Progressive Matrices
Sets A, A_B, B Frequency Polygon Both Sexes

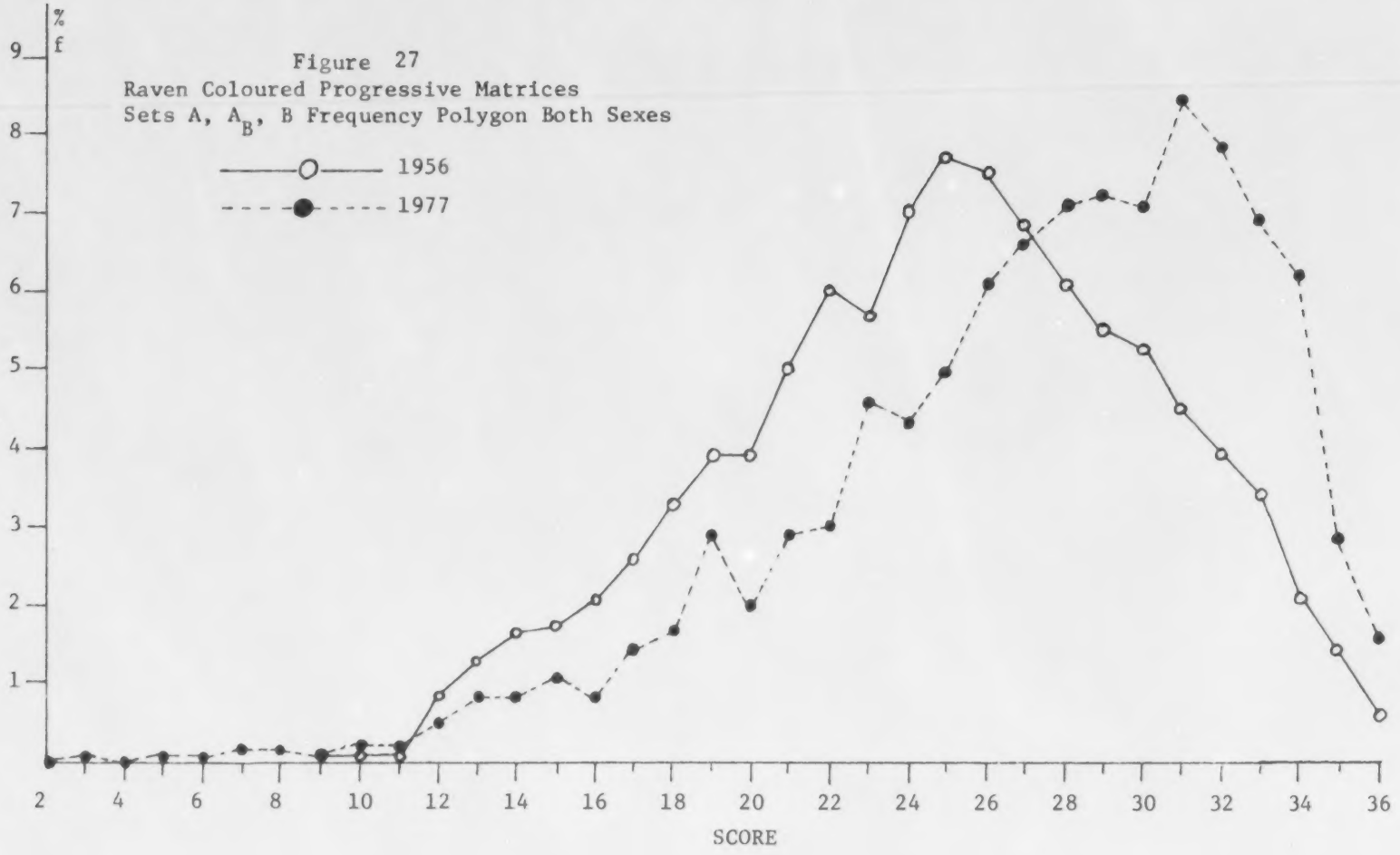


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TABLE 54

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

ITEM ANALYSIS 1956-1977 MALE

Subtest and Item		YEAR 1956 N=1836		YEAR 1977 N=1278	
		Diffic.	Discrim.	Diffic.	Discrim.
Set A	1	0.999	-0.007	0.994	0.183
	2	0.999	0.016	0.995	0.113
	3	0.998	0.038	0.986	0.239
	4	0.995	0.043	0.981	0.255
	5	0.985	0.087	0.974	0.223
	6	0.980	0.077	0.972	0.244
	* 7	0.791	0.302	0.851	0.372
	8	0.830	0.207	0.808	0.214
	9	0.872	0.288	0.875	0.369
	10	0.827	0.244	0.848	0.370
	**11	0.479	0.292	0.423	0.283
	12	0.306	0.286	0.325	0.290
Set A_B	13	0.993	0.081	0.978	0.301
	14	0.984	0.116	0.961	0.286
	15	0.980	0.065	0.956	0.302
	*16	0.770	0.391	0.851	0.397
	17	0.751	0.382	0.784	0.452
	18	0.798	0.427	0.777	0.506
	19	0.781	0.400	0.829	0.403
	20	0.717	0.419	0.674	0.440
	*21	0.484	0.409	0.647	0.427
	*22	0.548	0.388	0.653	0.372
	*23	0.518	0.279	0.639	0.346
	*24	0.206	0.334	0.363	0.315
Set B	25	0.990	0.063	0.970	0.240
	26	0.968	0.162	0.957	0.319
	27	0.922	0.334	0.922	0.390

TABLE 54 continued

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

ITEM ANALYSIS 1956-1977 MALE

Subtest and Item	YEAR 1956 N=1836		YEAR 1977 N=1278	
	Diffic.	Discrim.	Diffic.	Discrim.
28	0.868	0.387	0.887	0.403
*29	0.719	0.451	0.782	0.465
*30	0.530	0.410	0.678	0.405
*31	0.477	0.395	0.533	0.350
*32	0.278	0.443	0.489	0.472
*33	0.317	0.482	0.532	0.458
*34	0.403	0.446	0.661	0.515
*35	0.256	0.478	0.515	0.487
*36	0.134	0.347	0.240	0.347

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 55

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

ITEM ANALYSIS 1956-1977 FEMALE

Subtest and Item		YEAR 1956 N=1760		YEAR 1977 N=1299	
		Diffic.	Discrim.	Diffic.	Discrim.
Set A	1	0.999	0.030	0.996	0.069
	2	0.998	0.018	0.995	0.116
	3	0.998	0.033	0.982	0.150
	4	0.993	0.036	0.979	0.232
	5	0.987	0.071	0.971	0.263
	6	0.986	0.094	0.971	0.237
	* 7	0.720	0.345	0.834	0.357
	8	0.774	0.211	0.734	0.257
	9	0.827	0.320	0.839	0.376
	10	0.785	0.352	0.781	0.388
	11	0.415	0.344	0.450	0.381
	*12	0.216	0.296	0.294	0.293
Set A_B	13	0.993	0.098	0.978	0.332
	14	0.986	0.090	0.965	0.323
	15	0.983	0.044	0.956	0.288
	*16	0.678	0.439	0.840	0.398
	*17	0.673	0.396	0.791	0.409
	*18	0.705	0.515	0.763	0.464
	*19	0.707	0.448	0.819	0.417
	*20	0.615	0.441	0.681	0.452
	*21	0.440	0.441	0.646	0.431
	*22	0.564	0.350	0.685	0.380
	*23	0.426	0.316	0.590	0.364
	*24	0.189	0.337	0.380	0.298
Set B	25	0.989	0.066	0.977	0.260
	26	0.972	0.192	0.955	0.313

TABLE 55 continued

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

ITEM ANALYSIS 1956-1977 FEMALE

Subtest and Item	YEAR 1956 N=1760		YEAR 1977 N=1299	
	Diffic.	Discrim.	Diffic.	Discrim.
*27	0.865	0.382	0.915	0.378
*28	0.782	0.464	0.897	0.395
*29	0.526	0.483	0.683	0.435
*30	0.414	0.469	0.688	0.383
*31	0.380	0.389	0.483	0.275
*32	0.307	0.491	0.538	0.442
*33	0.379	0.515	0.605	0.479
*34	0.426	0.519	0.714	0.497
*35	0.322	0.513	0.596	0.520
*36	0.164	0.369	0.293	0.346

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

TABLE 56

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

ITEM ANALYSIS 1956-1977 BOTH SEXES

Subtest and Item		YEAR 1956 N=3596		YEAR 1977 N=2577	
		Diffic.	Discrim.	Diffic.	Discrim.
Set A	1	0.999	0.008	0.995	0.131
	2	0.999	0.019	0.995	0.115
	3	0.998	0.036	0.984	0.191
	4	0.994	0.040	0.980	0.243
	5	0.986	0.077	0.972	0.244
	6	0.983	0.081	0.971	0.240
	* 7	0.757	0.331	0.842	0.364
	8	0.803	0.215	0.770	0.236
	9	0.850	0.310	0.857	0.372
	10	0.806	0.306	0.815	0.378
	11	0.447	0.323	0.437	0.332
	12	0.262	0.296	0.309	0.291
Set A_B	13	0.993	0.090	0.978	0.317
	14	0.985	0.101	0.963	0.304
	15	0.981	0.052	0.956	0.295
	*16	0.725	0.423	0.846	0.398
	*17	0.713	0.395	0.787	0.430
	18	0.752	0.481	0.770	0.485
	*19	0.744	0.431	0.824	0.410
	20	0.667	0.437	0.677	0.446
	*21	0.463	0.426	0.646	0.429
	*22	0.556	0.363	0.669	0.376
	*23	0.473	0.304	0.614	0.355
	*24	0.198	0.335	0.372	0.306
Set B	25	0.989	0.065	0.974	0.249
	26	0.970	0.174	0.956	0.316

TABLE 56 continued

RAVEN COLOURED PROGRESSIVE MATRICES SETS A, A_B, B.

ITEM ANALYSIS 1956-1977 BOTH SEXES

Subtest and Item	YEAR 1956 N=3596		YEAR 1977 N=2577	
	Diffic.	Discrim.	Diffic.	Discrim.
27	0.894	0.367	0.918	0.383
*28	0.826	0.437	0.892	0.399
*29	0.625	0.476	0.732	0.445
*30	0.473	0.446	0.683	0.394
*31	0.429	0.397	0.508	0.311
*32	0.293	0.460	0.514	0.456
*33	0.347	0.487	0.569	0.466
*34	0.414	0.477	0.688	0.505
*35	0.288	0.482	0.556	0.501
*36	0.149	0.351	0.267	0.345

* More difficult for 1956 students by 0.05 or more
** More difficult for 1977 students by 0.05 or more

APPENDIX I

EDMONTON GRADE III ACHIEVEMENT: 1956-1977 COMPARISONS

PURPOSE

There is a great deal of public concern about student achievement; so much, that a major study to determine how well pupils are doing in the basic skills is amply justified. The Edmonton study is designed to provide answers by way of comparisons. The cost in teacher time, student time, and research funds should be well repaid by findings which will apply directly to the Edmonton Public School Board System, but which will be generalized in the minds of many to all schools. The major purpose of the study is to compare Grade III achievement in reading, arithmetic, and language, as measured by the same tests, 1956-1977.

The Edmonton study will be linked to a companion province-wide Grade III achievement study. For the future, a sufficient quantity of tests have been obtained that twenty or so years down the road, both Edmonton and province-wide comparisons could be made.

HISTORY

The origin of the 1956 survey is described in the Minutes of the April 13, 1956 meeting of the Edmonton Public School Board.

> The Superintendent reported that it is proposed to conduct in cooperation with the Alberta Advisory Committee on Educational Research a proposed survey of achievement of all the Grade III pupils in the Edmonton Public Schools with respect to reading, language, spelling and arithmetic. The project is being sponsored by Messrs. G.M. Dunlop, S.C.T. Clarke, R. S. MacArthur, R.C. Harper and W.H. Worth. Financial support is being provided by affiliated bodies which include the University of Alberta Research Fund, Faculty Committee on Educational Research, and the Edmonton Elementary Local of the A.T.A.

In the 1956 study the Grade III teachers administered the achievement tests and testers from the university administered the ability tests. All of the tests were marked by the university. School results, along with system-wide comparative data, were returned to the schools.

THE 1977 EDMONTON STUDY

The Edmonton Public School Board unanimously approved the following motion at the November 16, 1976 meeting:

> That the request by Dr. S.C.T. Clarke to conduct a replication study designed to examine the achievement and mental maturity of all Grade III students in the Edmonton Public School System be approved.

One of the important features of such a replication is that the original test booklets, with the students' original responses, are available. As a first step it is proposed to record on tape for computer analysis the responses of the Grade III pupils who took the tests in 1956, item by item. There are 165 items to test reading, 211 to test arithmetic, and 41 to test language (including spelling). The items are of familiar types. For example, there is a picture of a dog, and pupils are to mark the word that belongs with the picture from among did, egg, dog, two. Another example, from arithmetic: "If Tom has five marbles and Harry gave him three more, how many marbles would he then have?". The item by item record for the 1956 pupils will be available on the computer tape.

Teachers of Grade III students will be asked to administer the same achievement tests this May. They will not be asked to mark any tests. Each teacher of Grade III, and other persons, will be asked to indicate their professional opinion on which items are, because of age or other reasons, inappropriate. These items can then be omitted from the comparisons. More detailed information for teachers of Grade III students, and principals of the schools, will be sent to the schools prior to the testing.

EDMONTON'S PART IN PROVINCE-WIDE STUDY

In the province-wide study the most recent versions of the tests will be administered to a ten percent sample. In the Edmonton Public schools a ten percent sample for each of the most recent versions is required. This will be achieved without increasing the number of tests any student will take.

There are five tests, each of which takes approximately 40-50 minutes: A-reading, B-reading and language, C-arithmetic, D-ability, E-ability. All Edmonton Grade III students will take the original versions of A, B, C, and D. In ten percent of the classes with Grade III, students will not take E but instead will take the most recent version of A. A different ten percent will not take E but instead will take the most recent version of B. Still a different ten percent will not take E but instead will take the most recent version of C. The testers from the university will administer the original version of D and the most recent version to a different sample of ten percent.

In this manner, a province-wide sample of Grade III achievement using original versions of the tests will be available, and the scores of the most recent versions and the original can be equated.

INFORMATION WANTED

Does any teacher, or any school, which participated in the 1956 study have a copy of the instructions for administering the tests, or can anyone remember clearly what the instructions were? If so, please contact S.C.T. Clarke at 4-107 Education, The University of Alberta, phone 432-3752.

The University of Alberta
April 1977

S.C.T. Clarke
V. Nyberg
N.M. Purvis

APPENDIX 2

EDMONTON GRADE III ACHIEVEMENT: 1956-1977 COMPARISONS

INFORMATION FOR PRINCIPALS AND TEACHERS

OF GRADE III STUDENTS

GENERAL

No doubt you already have some information about this study. Participation of all schools and Grade III students was authorized by the Board at a meeting November 16, 1976. Immediately thereafter the Edmonton Journal and Edmonton Report carried articles about it. Attached to the April 4 issue of the Staff Bulletin was a sheet describing it in general terms. More detailed information is provided here.

There have been many expressions of public concern about standards of student achievement. In this province, these concerns sparked the formation of a government committee to study student achievement -- the Minister's Advisory Committee on Student Achievement. School personnel feel that students are achieving well, but recognize that there is always room for improvement. However, the call for "back to the basics" continues. The outcry from the public justifies a major study to establish how well students are achieving. The cost in teacher time and student time will be amply repaid by clearcut findings which can readily be understood by the public.

The purpose of the study is to compare Grade III achievement in reading, arithmetic, and language, as measured by the remaining test items (after eliminating inappropriate items) taken by Grade III students in 1956 and 1977.

HISTORY

About the end of May, 1956 all of the 3700 students in the Edmonton Public Schools were given a battery of achievement and ability tests. The survey was supported by the Edmonton Public School Board, The Edmonton Elementary School Local of the A.T.A. and the Alberta Advisory Committee on Educational Research. It was conducted by The University of Alberta. The actual test booklets with scores on individual items have been preserved and are available.

An extract from the Board minutes of April 13, 1956 tells the story.

The Superintendent reported that it is proposed to conduct in cooperation with the Alberta Advisory Committee on Educational Research a proposed survey of achievement of all the Grade III pupils in the Edmonton Public Schools with respect to reading, language, spelling and arithmetic. The project is being sponsored by Messrs. G.M. Dunlop, S.C.T. Clarke, R.S. MacArthur, R.C. Harper and W.H. Worth. Financial support is being provided by affiliated bodies which include the University of Alberta Research Fund, Faculty Committee on Educational Research, and the Edmonton Elementary Local of the A.T.A.

The Superintendent recommended that approval be given to the proposed survey of achievement in Grade III; that the Board contribute the services of the Grade III teachers in administering some of the tests and $500.00 towards the cost of the tests to be charged to the "guidance account."

MOVED BY Trustee D.H. Bowen:

"That the recommendation of the Superintendent of Schools for a proposed survey of achievement of all the Grade III pupils in the Edmonton Public Schools with respect to reading, language, spelling and arithmetic, with the Board to contribute the services of the Grade III teachers in administering some of the tests, and $500.00 towards the cost of the tests, be referred to the Management and Discipline Committee for consideration."

The procedure followed in 1956 is described below. The achievement tests were sent to the school in advance. About the end of May, the teachers of Grade III students administered the achievement battery (reading, arithmetic and language) and later, the reading tests. Two ability tests were administered by testers from the university. Teachers did not mark any tests. Each school was sent its own results, along with those of all schools for comparisons, when they became available.

1977 REPLICATION

History repeated itself when the Edmonton Public School Board at the November 16, 1976 meeting unanimously adopted the following motion:

That the request by Dr. S.C.T. Clarke to conduct a replication study designed to examine the achievement and mental maturity of all Grade III students in the Edmonton Public School system be approved.

As nearly as possible the 1956 study will be repeated. The same tests are available. The achievement tests are to be administered by the teachers of Grade III students and the achievement tests by testers from the university. Teachers will be asked to give their professional opinion on any test they deem inappropriate. These items will be eliminated in comparisons of achievement. Teachers are not being asked to mark any tests. This will be done at the university, and item by item the 1956 and 1977 results will be recorded for computer analysis. Schools will be sent back their own results along with cumulative results for comparative purposes, as soon as they are available.

1977 Provincial Sample

Under the aegis of the Minister's Advisory Committee on Student Achievement a province-wide sample of Grade III students is to be tested with the new versions of the tests used in the Edmonton study. Grade III students from the Edmonton public schools must be included in order to have a province-wide sample. The procedure which will be adopted will not increase the testing time for any Edmonton Grade III student, because one of the ability tests will not be administered to the students who are in the sample. The plan is as follows, where A_o is the original version of a reading test, B_o is the original version of a reading-language test, C_o is the original version of an arithmetic test, D_o is the original version of one ability test, and E_o is the original version of another ability test. A_L, B_L, C_L, D_L and E_L are the latest versions of these same tests. Each of these units, A_o or A_L etc. requires about 40-50 minutes of time to administer.

Groups	Test units for Edmonton Grade III Students				
Group 1 (10% sample)	A_o	B_o	C_o	A_L	**D_o**
Group 2 (a different 10% sample)	A_o	B_o	C_o	B_L	**D_o**
Group 3 (")	A_o	B_o	C_o	C_L	**D_o**
Group 4 (")	A_o	B_o	C_o	**D_L**	**D_o**
Group 5 (not in samples)	A_o	B_o	C_o	**E_o**	**D_o**

The ability tests (boxed) will be administered by testers from the university, and the achievement tests (not boxed) by the teachers of Grade III students. Test units B_o-C_o are parts of a test battery and are in the same test booklet, as are B_L-C_L.

The four ten percent samples have been selected to be representative of all schools with Grade III students in the system. The procedure explained above provides a 10% sample tie-in to the provincial sample and also links scores on the original with those on the latest versions of the tests.

INSTRUCTIONS, ACHIEVEMENT TESTING

*The sampling procedure allocates each school to one of the five groups described above. The accompanying letter specifies in which group your school is located.

*The dates for administering the achievement tests are May 18 - June 1.

*Prior to May 18 through the school board distribution system the package(s) of tests for each room with Grade III students will be sent to the principal of the school.

*The principal and Grade III teacher(s) will open each package and ensure that sufficient tests, instructions for administering the tests, and an extra test of each kind for recording opinions about inappropriate items are included. If anything appears amiss, please contact us.

*The tests are to be administered in the period May 18 to June 1 at the convenience of the school.

*If possible the achievement test battery (labelled "Complete Battery") should be administered first thing in the morning, with breaks between the three parts (reading, arithmetic, language).

*If possible the reading tests (two booklets) should be administered first thing the next morning.

*Students who are not present on the testing day will not be included in the returns. However, if on any one day there is undue absenteeism the teacher is requested to avoid administering a test on that day.

*The tests should be returned to the Principal for repackaging.

*The Principal is requested to make sure that all of the tests are completed and are collected from the teacher(s) of Grade III students for return to central office via the school board distribution system.

*The school will be sent the results of its students, along with system-wide results, as soon as these are available.

*Directions for administering the tests, and an extra test on which teachers mark inappropriate items, will be enclosed in the test package(s).

INSTRUCTIONS, ABILITY TESTING

*The testers will bring the required tests.

*The testers will report to the office or principal.

*The teacher of Grade III will introduce the testers, ensure that the pupils are ready, remain in the room because the testers may not be certificated, but could work at other matters.

*The testers will take the completed tests with them.

*As before, the school will be sent the results for its students, along with system-wide results, as soon as these are available.

APPENDIX 3

SPECIAL SESSIONS
4-107 EDUCATION II

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA
T6G 2G5

April 18, 1977

Dear Teacher of Grade III Students,

RE: Edmonton Grade III Achievement: 1956-1977 Comparisons

Enclosed is an information sheet describing the above study. This letter requests your cooperation and assistance in ensuring that the study is carried out in such a manner that its results will be above reproach.

Specifically, we request that in the time period May 18 - June 1 you administer the achievement tests to the Grade III students in your charge. The testing sequence provides that the original test battery (which can be identified by the acknowledgment at the very bottom of the cover "Reproduced by the University of Alberta with the permission of....") should be administered first thing on the first day, May 18 if possible. A break should be provided between each of these tests (reading, arithmetic, language). The original reading tests (which again can be identified by the acknowledgment at the very bottom "Reprinted by Permission of Teachers College Press") should be administered first thing next day if possible.

Teachers of Grade III students in schools in groups 1, 2, or 3 (see the enclosed information sheet) will also administer the latest version of an achievement test. This will provide data for a companion province-wide study which is also being conducted. Detailed instructions will be sent to the school in the test package.

While students are doing the achievement tests (attempting all of the items) we ask that you give your professional opinion on any items that you deem inappropriate, by circling the item in red and writing the reason right on the test booklet provided for the purpose.

The principal will forward the tests to the school board central office.

Following a schedule to be arranged and agreed upon, testers from the university will come to the school either in late April or between May 18 and June 1 to administer ability tests. You are requested to provide access for them to the Grade III students and perform the usual introduction and explanation to the class, and remain in the room during the testing. Teachers of split-grade classes are requested to provide a quiet activity or task for the non-grade III students.

It is our hope that you will help the study, and the cause of education, in the above ways.

Very sincerely yours,

SCTC/dc
Encl.

S.C.T. Clarke, Director, Special Sessions
V. Nyberg, Dept. of Educational Psychology
W.H. Worth, Dean, Faculty of Education

cc: Principal

The group into which your school is allocated by the sampling procedure used is group _____ (See attached sheet for explanation).

APPENDIX 4

SPECIAL SESSIONS
4-107 EDUCATION II

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA
T6G 2G5

April 18, 1977

Dear Principal,

RE: Edmonton Grade III Achievement: 1956-1977 Comparisons

Probably you have heard about this study from a number of sources. Enclosed is an information sheet for yourself, and one for each Grade III teacher in your school. The information sheet provides a detailed account of the origin, historical sequence, authorization, and nature of the study, and how it is linked to a province-wide companion study. The instructions in the two last sections detail the part your school and the teachers of Grade III students play in the study.

The information we have on Grade III enrollment in your school is as follows.

As the test packages will contain enough tests for the enrollment indicated above plus one extra test, please telephone or write if an enrollment figure is wrong.

When the test package arrives at your school during the week of May 9, please open it and check that the required instructions for administering, extra tests for teachers to use to indicate inappropriate items and the required number of tests for the enrollment in your school are included. If the package for your school has not arrived by May 13 please telephone.

If there is more than one teacher in the school in charge of Grade III students please arrange that all administer the same test at the same time on the same day.

When the tests have been administered May 18 - June 1 please have them collected, packaged, and returned to the E.P.S.B. administration office at 10010 - 107 A. Avenue via the school board distribution system.

The university testers will be available to administer the ability tests in your school either in late April or from May 18 to June 1. We will telephone you to schedule a mutually convenient day and time.

The direct payoff to the school will be the return to you of the results made by the Grade III students of your school, along with those of the totality, for comparative purposes. A second and most important payoff will be the contribution your school makes to a definitive answer to the queries the public asks about achievement in the 3 R's. We hope that you will help us in this worthwhile project.

Very sincerely yours,

SCTC/dc

S.C.T. Clarke, Director, Special Sessions
V. Nyberg, Dept. of Educational Psychology
W. H. Worth, Dean, Faculty of Education

cc Teacher(s) of Grade III students

The group into which your school is allocated by the sampling procedure used is group _____ (see attached sheet for explanation).

APPENDIX 5

EDMONTON GRADE III ACHIEVEMENT: 1956-1977 COMPARISONS

INFORMATION FOR PRINCIPALS AND TEACHERS OF GRADE III STUDENTS

I. CONTENTS

*Each package contains one test for each student enrolled according to the information in our letter to you of April 18, 1977, or as updated by you, plus one extra test of each kind in case an increase in enrollment occurs.

*For the teacher, each package contains one extra test of types A_o (original version of Gates reading tests), B_o and C_o (original version of California Achievement Test Battery), and A_L (the latest version of the Gates reading tests, now Gates-MacGinitie) stamped with a red stamp for the teacher to mark items deemed inappropriate.

*For the teacher, directions for administering the tests.

II. INSTRUCTIONS

*Your school is in Group 1.

*The achievement tests to be administered are as follows:

A_o — The original Gates Word Recognition and Gates Paragraph Meaning (general directions are on a canary-colored sheet, detailed instructions are on the front of the test booklet). Testing time is about 40 minutes. To be administered on the morning of May 18 if possible.

B_o and C_o — The original California Achievement tests, complete battery READING, ARITHMETIC, and LANGUAGE (the general and detailed directions are on stapled canary-colored sheets). Testing time about 95 minutes. To be administered on the mornings of May 18 - 19 if possible.

A_L — The latest version (1964) edition of the Gates-MacGinitie reading tests (general and detailed directions are in the Teacher's Manual). Testing time about 50 minutes. To be administered on the morning of May 20 if possible.

III. RETURN OF THE TESTS

*A gummed identification label is attached so that on return to the E.P.S.B. Administration Office at 11007 - 107 Avenue, the label will readily identify the package. You may wish to retain the jiffy bag (unstaple) or other packaging for use in returning the tests.

*As soon as all of the achievement tests have been administered, they should be packaged and returned to the E.P.S.B. Administrative offices via the school delivery system. Within the package, please parcel the tests by teacher: all of the tests taken by students in any class plus the tests used by the teacher to mark inappropriate items together in one parcel. This will facilitate our identification and collation of the different tests written by each student. Please return any unused tests.

APPENDIX 6

EDMONTON GRADE III ACHIEVEMENT 1956-1977 COMPARISONS

INFORMATION FOR PRINCIPALS AND TEACHERS OF GRADE III STUDENTS

I. CONTENTS

*Each package contains one test for each student enrolled according to the information in our letter to you of April 18, 1977, or as updated by you, plus one extra test of each kind in case an increase in enrollment occurs.

*For the teacher, each package contains one extra test of types A_o (original version of Gates reading tests), B_o and C_o (original version of California Achievement Test battery) stamped with a red stamped for the teacher to mark items deemed inappropriate.

*For the teacher, there is a canary-colored sheet stamped in red for the teacher to mark items deemed inappropriate for B_L (the latest version of the California Achievement Test). In Group 2 schools, only the READING and LANGUAGE parts are to be administered.

*For the teacher, directions for administering the tests.

II. INSTRUCTIONS

*Your school is in Group 2.

*The achievement tests to be administered are as follows:

A_o The original Gates Word Recognition and Gates Paragraph Meaning (general directions are on a canary-colored sheet, detailed instructions are on the front of the test booklet). Testing time about 40 minutes. To be administered on the morning of May 19 if possible.

B_o and C_o The original California Achievement Tests, complete battery READING, ARITHMETIC, and LANGUAGE (the general and detailed directions are on staped canary-colored sheets). Testing time about 95 minutes. To be administered on the morning of May 18 if possible.

B_L The latest version (1970 edition) of the California Achievement Tests READING and LANGUAGE parts only (the general and detailed directions are on stapled green sheets). Testing time about 75 minutes. To be administered if possible on the morning of May 20. Do not administer the MATHEMATICS part.

III. RETURN OF THE TESTS

*A gummed identification label is attached so that on return to the E.P.S.B. Administration Office at 11007 - 107 Avenue, the label will readily identify the package. You may wish to retain the jiffy bag (unstaple) or other packaging for use in returning the tests.

*As soon as all of the achievement tests have been administered, they should be packaged and returned to the E.P.S.B. Administrative Offices via the school delivery system. Within the package, please parcel the test by teacher: all of the tests taken by students in any class plus the tests used by the teacher to mark inappropriate items together in one parcel. This will facilitate our identification and collation of the different tests written by each student. Please return any unused tests.

APPENDIX 7

EDMONTON GRADE III ACHIEVEMENT 1956-1977 COMPARISONS

INFORMATION FOR PRINCIPALS AND TEACHERS OF GRADE III STUDENTS

I. CONTENTS

*Each package contains one test for each student enrolled according to the information in our letter to you of April 18, 1977, or as updated by you, plus one extra test of each kind in case an increase in enrollment occurs.

*For the teacher, each package contains one extra test of types A_o (original version of Gates reading tests), B_o and C_o (original version of California Achievement Test battery) stamped with a red stamp for the teacher to mark items deemed inappropriate.

*For the teacher, there is a canary-colored sheet stamped in red for the teacher to mark items deemed inappropriate for C_L (the latest version of the California Achievement Test). In Group 3 schools, only the MATHEMATICS part is to be administered.

*For the teacher, directions for administering the tests.

II. INSTRUCTIONS

*Your school is in Group 3.

*The achievement tests to be administered are as follows:

A_o The original Gates Word Recognition and Gates Paragraph Meaning (general directions are on a canary-colored sheet, detailed instructions are on the front of the test booklet). Testing time is about 40 minutes. To be administered on the morning of May 19 if possible.

B_o and C_o The original California Achievement Tests, complete battery READING, ARITHMETIC, and LANGUAGE (the general and detailed directions are on stapled canary-colored sheets). Testing time about 95 minutes. To be administered on the morning of May 18 if possible.

C_L The latest version (1970 edition) of the California Achievement Tests, MATHEMATICS part only (the general and detailed directions are on stapled green sheets). Testing time about 48 minutes. To be administered if possible on the morning of May 20. Do not administer the READING AND LANGUAGE parts.

III. RETURN OF THE TESTS

*A gummed identification label is attached so that on return to the E.P.S.B. Administration Office at 11007 - 107 Avenue, the label will readily identify the package. You may wish to retain the jiffy bag (unstaple) or other packaging for use in returning the tests.

*As soon as all of the achievement tests have been administered, they should be packaged and returned to the E.P.S.B. Administrative offices via the school delivery system. Within the package, please parcel the tests by teacher: all of the tests taken by students in any class plus the tests used by the teacher to mark inappropriate items togehter in one parcel. This will facilitate our identification and collation of the different tests written by each student. Please return any unused tests.

APPENDIX 8

EDMONTON GRADE III ACHIEVEMENT 1956-1977 COMPARISONS

INFORMATION FOR PRINCIPALS AND TEACHERS OF GRADE III STUDENTS

I. CONTENTS

*Each package contains one test for each student enrolled according to the information in our letter to you of April 18, 1977, or as updated by you, plus one extra test of each kind in case an increase in enrollment occurs, plus one test for the teacher to use for marking items deemed inappropriate. This test is stamped with a red stamp.

*Each package contains a photocopy of the test manual instructions for administering the tests.

II. INSTRUCTIONS

*Your school is in Group 4.

*The achievement tests to be administered are the original Gates Word Recognition and Gates Paragraph Meaning (labelled A_o on the long sheet mailed to the school) plus the original California Achievement Test Battery (reading and language labelled B_o on the long sheet; and arithmetic, labelled C_o).

*The California Achievement Test Battery should be administered first thing in the morning if possible on May 18, allowing for a break between reading and arithmetic, and another between arithmetic and language. Total testing time is about 95 minutes.

*The Gates reading tests should be administered first thing in the morning, if possible on May 19. Total testing time is 40 minutes.

III. RETURN OF THE TESTS

*A gummed identification label is attached so that on returns to the E.P.S.B. Administration Office at 11007 - 107 Avenue, the label will readily identify the package. You may wish to retain the jiffy bag (unstaple) or other packaging for use in returning the tests.

*As soon as all of the achievement tests have been administered, they should be packaged and returned to the E.P.S.B. Administrative offices via the school delivery system. Within the package, please parcel the tests by teacher: all of the tests taken by students in any class plus the tests used by the teacher to mark inappropriate items together in one parcel. This will facilitate our identification and collation of the different tests written by each student. Please return any unused tests.

APPENDIX 9

EDMONTON GRADE III ACHIEVEMENT 1956-1977 COMPARISONS

INFORMATION FOR PRINCIPALS AND TEACHERS OF GRADE III STUDENTS

I. CONTENTS

*Each package contains one test for each student enrolled according to the information in our letter to you of April 18, 1977, or as updated by you, plus one extra test of each kind in case an increase in enrollment occurs, plus one test for the teacher to use for marking items deemed inappropriate. This test is stamped with a red stamp.

*Each package contains a photocopy of the test manual instructions for administering the tests.

II. INSTRUCTIONS

*Your school is in Group 5.

*The achievement tests to be administered are the original Gates Word Recognition and Gates Paragraph Meaning (labelled A_o on the long sheet mailed to the school) plus the original California Achievement Test Battery (reading and language labelled B_o on the long sheet; and arithmetic, labelled C_o).

*The California Achievement Test Battery should be administered first thing in the morning if possible on May 18, allowing for a break between reading and arithmetic, and another between arithmetic and language. Total testing time is about 95 minutes.

*The Gates reading tests should be administered first thing in the morning, if possible on May 19. Total testing time is 40 minutes.

III. RETURN OF THE TESTS

*A gummed identification label is attached so that on return to the E.P.S.B. Administration Office at 11007 - 107 Avenue, the label will readily identify the package. You may wish to retain the jiffy bag (unstaple) or other packaging for use in returning the tests.

*As soon as all of the achievement tests have been administered, they should be packaged and returned to the E.P.S.B. Administrative offices via the school delivery system. Within the package, please parcel the tests by teacher: all of the tests taken by students in any class plus the tests used by the teacher to mark inappropriate items together in one parcel. This will facilitate our identification and collation of the different tests written by each student. Please return any unused tests.

APPENDIX 10

EDMONTON GRADE III ACHIEVEMENT: 1956-1977 COMPARISONS

LIST OF SCHOOLS APPROACHED

EDMONTON PUBLIC SCHOOL DISTRICT NO. 0007

Legend: Group Number, Test Code; Department of Education School Number; Name and Address of School; Principal, Number of Teachers, Grade Level; Number of Students, Teacher(s) Name, Grade Level.

GROUP 1 A_o B_o C_o A_L D_o

1.	7100 Abbott 12045 - 34 Street Edmonton T5W 1Z5	A.E. Drews 018	1-6	10 Mrs. D. Bodnar 2-3 7 Sydney Nugent 3-4 27 Douglas Scott
2.	7234 Aldergrove c/o Elmwood 8525 - 182 Street Edmonton	W. Fisher 016	1-6	29 Gloria Cook 29 Christine Graham
3.	7103 Argyll 8540 - 69 Avenue Edmonton T6E OR6	R.E. MacArthur (Miss) 06	K6	10 Phyllis Krause
4.	7205 Glendale 9812 - 161 Street Edmonton T5P 3H4	H.R. Eichelt 018	K6	12 Connie McGrath 23 Lucille Wooding
5.	7129 Grovenor 10345 - 144 Street Edmonton T5N 2V3	D.R. McLeod 011	1-6	14 Carol Brown 3-4 17 Lillian Soroka 2-3
6.	7206 High Park 11031 - 154 Street Edmonton T5P 2K2	M. J. Finstad (Mrs.) 011	K-6	31 Betty Hewitt
7.	7185 Lendrum 11330 - 54 Avenue Edmonton T6H OV7	B. Voice 018	1-6	17 Elsie Kazakoff 2-3 18 Carol Olson 3-4
8.	7151 Montrose 11931 - 62 Street Edmonton T5W 4C7	J.A. Shaul (Mrs.) 014	K-6	24 Lori Leskiw 8 Ellen Zinger

9.	7195 McKee 10725 - 51 Avenue Edmonton T6H 0L3	Dr.H. Kleparchuk 028	K6	25 Isobel Hancheroff 24 Audrey Kottke 24 Donna Sanderman 10 Judith VanManen 3-4
10.	7526 Newton 5523 - 122 Avenue Edmonton T5W 1X3	O. Stretton (Mrs.) 019	K6	25 James Allen 23 Deborah Badger
11.	7216 Thorncliffe 8215 - 175 Street Edmonton T5T 0G9	L.D. Ramsey 028	K6	24 Eleanor Geistlinger 26 Susan Hanson 5 Dorothy King 26 Diane Tyrkalo

GROUP 2 A_o B_o C_o B_L D_o

12.	7226 Brander Gardens 14865 - 56 Avenue Edmonton T6H 5G2	P.J. Wyllie 017	K6	24 Mary Enns 13 Kathryn Nielsen 3-4
13.	7128 Grandview Heights 6225 - 127 Street Edmonton T6H 3W8	M. Bowen (Mrs.) 017	K9	11 Deborah Collin
14.	7514 Holyrood 7920 - 94 Avenue Edmonton T6C 1W5	L.S. Fossum 020	K6	23 Bernice Anderson 16 Olga Klem 2-3 8 Helene Magus 2-3 6 Dennis Windrim 3-4
15.	7136 Inglewood 11515 - 127 Street Edmonton T5M 0V4	O.L. Mix 011	1-6	28 Lillian Donison 15 Naomi Hammer 2-3
16.	7188 J.A. Fife 15004 - 76 Street Edmonton T5C 1C2	H.A. Stretch 022	K6	10 Paula Dorval 2-3 22 Beverly MacInnes 25 Marvalie Ritchie
17.	7186 Malmo 4716 - 115 Street Edmonton T6H 3N8	B. Larson 018	K6	25 Jleene Ditchburn 24 Dorothy Fraser
18.	7209 Mayfield 10950 - 159 Street Edmonton T5P 3C1	E. G. Ewasiuk 014	K6	15 Dale Bailie 17 Florence Foggs
19.	7187 Princeton 7720 - 130 Avenue Edmonton T5C 1Y2	J.C. Hunter 020	K6	23 Trudy Paulgaard 24 Sylvia Kallis
20.	7171 Scott Robertson 13515 - 107 Street Edmonton T5E 4W3	M.A. Huculak 023	K6	15 Mabel Kozmak 2-3 19 Joyce Lukasiewich 2-3 27 Ellen Neeser

21. 7542 Westglen 10950 - 127 Street Edmonton T5M 0X7	H.K.Montgomery 018 K6	26 Helen Harry 20 Robert Scholtz 3-4
22. 7213 Youngstown 10330 - 163 Street Edmonton T5P 3N5	C.A. Woodward 026 K6	24 Lorraine Christian 26 Pearl Livingston

GROUP 3 A_o B_o C_o C_L D_o

23. 7193 Clara Tyner 9420 Ottewell Rd. Edmonton T6B 2E2	Mrs. A. Oberg 010 K4	14 Olga Ewashko 3-4 28 Valerie Johnson
24. 7118 Delton 12126 - 89 Street Edmonton T5B 3W4	G.E. Eliasson 021 1-6	26 Margaret Shupe 24 Pauline Smith
25. 7505 Donnan 7803 - 87 Street Edmonton T6C 3G1	M. L. Semeluk 021 K9	25 Ruth Winter
26. 7204 Elmwood 16325 - 83 Avenue Edmonton T5R 3V8	K.H. Seale 019 K6	23 Lorraine Hugo 21 Rose Michalchuk
27. 7127 Gold Bar 10524 - 46 Street Edmonton T6A 1Y3	B. J. Mack 018 1-6	20 Thelda Breadner 18 Eileen Rimer
28. 7224 Lee Ridge 440 Milbourne Rd.E Edmonton T6K 1Y8	B.K. Tranter 019 K6	23 R.D. Tranter 27 Doreen Schepp 26 Iris Woychuk
29. 7143 McArthur 13535 - 134 Street Edmonton T5L 1W3	G.A. Traynor 017 K6	22 Mary Binette 10 Maxine Grant 2-3 20 Gabriele Stiles
30. 7169 R.J. Scott 11610 - 38 Street Edmonton T5W 2H1	D. H. Ross 016 K6	26 Veronica Horon 12 Christine Otto 2-3
31. 7212 Sherwood 9550 - 152 Street Edmonton T5P 0B9	R.W. Dahlstedt 014 K6	18 Emma Bahr 2-3 13 Ethel Grant 3-4
32. 7189 Waverly 6825 - 89 Avenue Edmonton T6B 0N3	J. Kischuk 026 K6	23 Sylvia Killick 25 Geraldine Peters 24 Judy Ringuette

GROUP 4 A_o B_o C_o D_L D_o

33. 7104 Athlone
12940 - 129 Street
Edmonton T5L 1J3
R.E. Clintberg
016 K6
27 Margaret Mork
11 Susan Muller

34. 7112 Braemar
9359 - 67A. Street
Edmonton T6B 1R7
D.G. Risdon
018 K7
29 Maureen Gottschlich
11 Tom Russell 2-3

35. 7215 Evansdale
9303 - 150 Avenue
Edmonton T5E 2N7
R.E. Tkachuk
030 1-6
28 Elaine Gilchrist
26 Christine Vernon)
26 Darryl Smith)

36. 7184 Glengarry
9211 - 135 Avenue
Edmonton T5E 1N7
M. Mazeppa
022 K6
22 Linda Anderson
21 Lillian Searle

37. 7138 Kildare
7525 - 144 Avenue
Edmonton T5C 2R8
D.E. Millar
024 K6
28 Mary Christianson
29 Marilyn Cameron
11 Loree Paulgaard 3-4

38. 7517 King Edward
8530 - 101 Street
Edmonton T6E 3Z5
W.A. Day
032 1-9
11 Debra Idland 3-4
19 Margaret Juchli

39. 7223 Malcolm Tweddle
2340 Milbourne Rd.
Edmonton T6K 1Y9
G.R. Knowles
025 K6
18 Nancy Killips
22 Ingrid Zukiwski

40. 7153 Mount Royal
11303 - 55 Street
Edmonton T5W 3P6
T.C. Leroho
010 K6
26 Sara Coumantarakis

41. 7161 Prince Charles
12325 - 127 Street
Edmonton T5L 0Z9
H.E. Callender
015 K6
22 Janice Ruhl

42. 7170 Rutherford
8620 - 91 Street
Edmonton T6C 3N2
R.M. Johnson
(miss)
012 K6
23 Jean Adams

43. 7197 Westbrook
11915 - 40 Avenue
Edmonton T6J 0S1
A. H. Grossman
021 K6
25 Nancy Becker
10 Elizabeth Johnson 3-4
25 Nora Yakula

GROUP 5 A_o B_o C_o E_o D_o

44. 7192 Afton 16604 - 91 Avenue Edmonton T5R 5A4	E. Friss 022 K6	14 Margaret Adams 2-3 24 Marguerite Corscadden 23 Helen Watson
45. 7101 Alex Taylor 9321 Jasper Avenue Edmonton T5H 3T7	S.R. Ramsankar 019 K6	28 Arthur Inscho
46. 7500 Allendale 6415 - 106 Street Edmonton T6H 2V5	C.E. Climenhaga 025 K9	30 Phoebe Drasak
47. 7501 Avonmore 7340 - 78 Street Edmonton T6C 2N1	A.B. Cniswell 035 1-8	25 Elinor Bridgman 29 Joan Lymburner
48. 7107 Belgravia 11605 - 74 Avenue Edmonton T6G 0G1	T.W. Powers 09 K6	21 Celia Palmer
49. 7108 Bellevue 11515 - 71 Street Edmonton T5B 1W1	D.C. Geake 011 K6	14 Patricia Cohoon 2-3 16 Katherine Morrison 3-4
50. 7109 Belvedere 13359 - 62 Street Edmonton T5A 0V5	J. W. Brown 029 1-6	29 Elizabeth Baran 29 Donna Bates 29 Joan Shapka
51. 7111 Beverly Heights 4626 - 115 Avenue Edmonton T5W 0W2	N.R. Holt 09 K6	14 Frances Cummings
52. 7504 Brightview 15425 - 106 Avenue Edmonton T5P 0W3	M.D. Hannan 019 1-6	19 Donald Badger 22 Helen Lerke
53. 7146 Brookside 5504 - 143 Street Edmonton T6H 4E5	D.G. Rea 021 K6	27 Susan Ashworth 27 May Kurz
54. 7225 Caernarvon 14820 - 111 Street Edmonton T5X 1T4	E.D. Blakeman (Mrs.) 022 K6	25 Ruth Anderson 25 Louise Miller 24 Janet Oddie
55. 7113 Calder 12950 - 111 Street Edmonton T5E 5L2	H.L. Radcliffe 016 K6	11 Lorna Adlard 3-4 25 Cathleen Earle

56. 7114 Capilano 10720 - 54 Street Edmonton T6A 2H9	E.P. Eberly 012 K6	29	Donna Gerhardt
57. 7115 Coronation 10925 - 139 Street Edmonton T5M 1P8	A.P. Mazur (Mrs.) 010 K6	26	Doretha Hempton
58. 7503 Crestwood 9735 - 144 Street Edmonton T5N 2T3	L.J. Throndson 017 K9	24	Jovce Barton
59. 7117 Crondale/Virginia Park 11240 - 79 Street Edmonton T5B 2K1	R.K. Muirhead 07 K6	10	Edith Aitken
60. 7194 Delwood 7315 Delwood Rd. Edmonton T5C 3A9	J.R. Powell 031 K6	24 24 9 14 24	Kathryn Fletcher Sonja Hunchak David Kitz 3-4 Nadia Kryschuk 2-3 Karen Turner
61. 7121 Dovercourt 13910 - 122 Avenue Edmonton T5L 2W3	G.M. Tkachuk 023 K6	27	Madeleine Schiller
62. 7218 Duggan 10616 - 36A. Avenue Edmonton T6J 0C9	R.H. Schultz 035 K5	26 27 27 27 25	Shirley Pryor Barry O'Neill Bonita Eliuk Kathleen Ewoniak Robert McPhee
63. 7507 Eastwood 12023 - 81 Street Edmonton T5B 2S9	R.L. Rhine 023 K9	24 10	Judith Moen Joanne Otway 2-3
64. 7233 Ekota 395 Knottwood Rd.E. Edmonton T6K 2P5	C.L. Carr (Mrs.) 09 1-6	13	Marshall Wynnychuk
65. 7123 Forest Heights 10304 - 81 Street Edmonton T6A 3X4	J.W. Hobson 017 K6	25 9	Frances Cuyler Betty Dressler 2-3
66. 7506 Fulton Place 10310 - 56 Street Edmonton T6A 2J2	J.W. Hobson 019 1-9	25	Helen Johnston

67. 7509 Garneau 10925 - 87 Avenue Edmonton T6G 0X4	A.K. Molyneux 029 K9	11 Judith Pawl 3-4 14 Lydia Redlick	
68. 7126 Elenora 13520 - 102 Avenue Edmonton T5N 0N7	H.G. Puffer 011 K6	25 Alexandra Lowe	
69. 7220 Grace Martin 8210 - 36 Avenue Edmonton T6K 0C7	H.G. Chester 029 K6	21 Thomas Bowen 21 Brenda Holly 21 Jocelyn Psikla	
70. 7178 Greenfield 3735 - 114 Street Edmonton T6J 2G6	A. Lust 031 K6	27 Lois Daniels 14 Patricia Wyllie 26 Cecile Silzer 27 Anna Keech	
71. 7511 H.A. Gray 12140 - 103 Street Edmonton T5G 2J9	E.P. Wynychuk 032 K9	24 Marisa Giacobbo	
72. 7132 Hazeldean 6715 - 97 Street Edmonton T6E 3J9	R.G. Evoy 023 K6	23 Donna Goulet 25 Isabella Woywitka	
73. 7135 Idylwylde 8610 - 81 Street Edmonton T6C 2U9	G.M. Adams (Miss) 014 K6	7 Christie Leeuw 3-4 8 Pauline Smith 2-3	
74. 7207 James Gibbons 8945 - 153 Street Edmonton T5R 1P1	P. Mosychuk 012 K6	25 Beverly Podmore	
75. 7214 John Barnett 14840 - 72 Street Edmonton T5C 3E5	S. Lobay 019 K6	29 Heather Cameron 32 Majorie Wakeham	
76. 7137 Kensington 13410 - 119 Street Edmonton T5E 5N1	B.W. McIntosh 020 K6	12 Diane Klassen 2-3 28 Bessie Zadimersky	
77. 7180 Landsdowne 12323 - 51 Avenue Edmonton T6H 0M6	D.E. Hudson 014 K6	29 Linda Marshall	
78. 7141 Lauderdale 10610 - 129 Avenue Edmonton T5E 4V6	T.R. Coxford 019 1-6	14 Margaret Green2-3 9 Maureen Osinchuk 3-4	

79. 7518 Laurier Hgts. 8210 - 142 Street Edmonton T5R 0L9	V. Sulatycky 029 K9	25 Marlaine McBeth 8 Irma Porter 2-3
80. 7208 Lynnwood 15451 - 84 Avenue Edmonton T5R 3Y1	A. Romaniuk 022 1-6	23 Rosemary Shacker 23 Lynn Spadafora 23 Shirley Thompson
81. 7210 Meadowlark 9150 - 160 Street Edmonton T5R 2J2	J.G. Marion 016 K6	22 Olga Farion 12 Rhoda Ristock 2-3
82. 7149 Mee-Yah-Noh 9221 - 128A. Avenue Edmonton T5E 0J7	R.W. Vogel 021 K6	23 Marjorie Ferguson 20 Veronica Ritcey
83. 7150 Mill Creek 9735 - 80 Avenue Edmonton T6E 1S8	R.W. Hodges 020 K6	11 Olga Allen 2-3 20 Cheryl Knull
84. 7524 Mount Pleasant 10541 - 60A. Avenue Edmonton T6H 1K4	A.M. Clark (Miss) 018 K6	28 Thelma Coombs 9 Margaret Hagen 3-4
85. 7520 McCauley 9538 - 107 Avenue Edmonton T5H 0T7	G.L. Taylor 023 1-9	12 Frances Sissons 2-3 10 Joy Wisniewski 3-4
86. 7521 McDougall 10930 - 107 Street Edmonton T5H 2Z4	R.S. Quigg 025 K9	19 Graeme Walker
87. 7523 McKernan 11330 - 76 Avenue Edmonton T6G 0K1	T. Dublanko 026 1-9	23 Janet Meade 5 Alixe Miller 2-3
88. 7200 McLeod 14807 - 59 Street Edmonton T5A 1Y3	J.R. Russell (Mrs.) 028 K4	Douglas Cowen 3-4 25 Sherrill Schmidt 27 Douglas Troock 25 Pat Winwood
89. 7148 McQueen 14425 McQueen Rd. Edmonton T5N 3L3	J.E. Mucha (Mrs.) 07 K6	12 Leona Pickard
90. 7155 N. Edmonton 6920 - 128 Avenue Edmonton T5C 1S7	E.J. Homeniuk 019 1-6	20 Diane Rolin 7 Dianne Soar 3-4

91.	7191 Northmount 14020 - 88A. Street Edmonton T5E 3J4	J.S. McCormick 024	K6	27 Marlene Basaraba 31 Donna Hughes 14 Kathleen Meropoulis 2-3
92.	7156 Norwood 9520 - 111 Avenue Edmonton T5G 0A6	D.L. Bjornson 018	K6	6 Terrence Gietz 2-3 20 Violet Saskiw 7 Patricia Wagers 3-4
93.	7527 Oliver 10210 - 117 Street Edmonton T5K 1X6	R.N. Davidson 021	K9	26 Jacqueline Serdiak
94.	7529 Parkallen 6703 - 112 Street Edmonton T6H 3J9	L.N. Macnaughton 017	K6	28 Diana Barry
95.	7530 Parkdale 11648 - 85 Street Edmonton T5B 3E5	C.L. Olsen 021	K9	23 Kevin McKay 23 Sharlene Wyness
96.	7631 Parkview 14313 - 92 Avenue Edmonton T5R 5B3	D.G. Marion 035	1-9	17 Roma Dartnell 2-3 18 Eira Spaner 3-4
97.	7176 Patricia Hgts. 16216 - 78 Avenue Edmonton T5R 3E6	W.A. Blench 014	K6	25 Sonja Bergstrom 27 Linda Melnychuk
98.	7162 Prince Rupert 11515 - 113 Avenue Edmonton T5G 0J3	S.J. Skirrow 05	K6	9 Louise Feniak
99.	7164 Queen Alexandra 7730 - 106 Street Edmonton T6E 4W3	M.R.Greenslade 016	1-6	11 Myrtle Hadsen 3-4 8 Sharon Smith 2-3
100.	7165 Queen Mary Park 10935 - 113 Street Edmonton T5H 3J4	S.J. Skirrow 016	K6	22 Anna Podealuk
101.	7201 Richard Secord 4025 - 117 Street Edmonton T6J 1T4	J.C. Calkins 029	K6	25 Crystal Farrar 29 Sylvia McLaren 28 Vivian Samoil
102.	7211 Rio Terrace 7608 - 154 Street Edmonton T5R 1R7	A.D. Marzolf 021	K6	15 Judy Law 3-4 11 Romana Struk 2-3 31 Yvonne Tunney
103.	7168 Riverdale 8901 - 101 Avenue Edmonton T6H 4C6	A.F. Kostyk 06	1-6	8 Allen Kostyk

104. 7196 Rundle 11005 - 34 Street Edmonton T2W 1Y7	Dr.I.G. Dent 029 1-6	22 Margaret Campbell 19 Larysa Chomiak 22 Lynda Durand 23 Julia Kolmatycki
105. 7235 Satoo 8515 - 17 Avenue Edmonton T6K 2C7	R.W. Holmes 015 1-6	9 Diane Allen 32 Harvey Tilden 2-3
106. 7536 Sherbrooke 12245 - 131 Street Edmonton T5L 1M8	M. Bulat 026 K9	27 Aurora Mastuler 8 Mary Melnychuk 2-3
107. 7537 Spruce Avenue 11424 - 102 Street Edmonton T5G 2E7	D.R. Barnett 021 K9	13 Terry Marshall 3-4 10 Jean Newby 2-3
108. 7539 Strathearn 9336 - 87 Street Edmonton T6C 1T8	R.L.C. Baker 029 K9	12 Doris Colter 2-3 25 Sophie Sadowsky
109. 7911 Talmud Torah 13212 - 106 Avenue Edmonton T5N 1A3	Rabbi J. Kronenberg 08	24 Michelle Rosich
110. 7175 Terrace Heights 6859 - 100 Avenue Edmonton T6A 0G3	J.A. Kokotylo (Miss) 014 K6	25 Patricia Alexander 6 Dorothy Quinn 2-3
111. 7177 Virginia Park 7324 - 109 Avenue Edmonton T5B 0A1	R.K. Muirhead 06 K6	10 Stephanie Rudko
112. 7182 Windsor Park 8720 - 118 Avenue Edmonton T6G 1T5	J.G. Zapach 013 K6	18 Dennis Schienbein
113. 7183 Woodcroft 13750 Woodcroft Ave. Edmonton T5M 3M4	C.G. Cooke 016 K6	13 Arlene White
114. 7198 York 13915 - 61 Street Edmonton T5A 1P3	M.L. Pedde 022 1-6	24 Ronald Bradley 24 Mary-Jane Cousins 25 Margaret Skett 26 Wendy Troock
115. 7106 Beacon Heights 4610 - 121 Avenue Edmonton T5W 1M8	G.A. Orlick 012 K6	25 Margaret Horton

SPECIAL SESSIONS
4-107 EDUCATION II

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA
T6G 2G5

APPENDIX 11

June 20, 1977

Re: Edmonton Grade III Achievement: 1956-1977 Comparisons

Dear Teacher of Grade III Students,

The study would not have been possible without your help, and that of the other 233 teachers of Grade III students who participated. The time and effort you devoted to the study is much appreciated. It is our hope that the cause of education will be furthered by our combined efforts. This letter is to thank you for your part.

Some teachers have indicated that they could have administered the ability tests. We agree. However, the procedure employed in 1956 was to engage university students for this purpose and we wished to follow the 1956 routine as closely as possible. This will prevent critics from claiming that results in 1977 were different merely because testing procedures were different. We therefore employed a group of university students to administer the tests.

You may recall that the attachment to the April 4, 1977 Staff Bulletin asked for information about how the tests were administered in 1956. We were looking for general information such as whether the instructions suggested that they be given only in the mornings, etc. Unfortunately, no such records were found, perhaps because of the time gap of over twenty years. Fortunately, detailed instructions for administering the tests were in the test manuals.

We are most pleased to report that the achievement tests were administered by teachers, and packaged and returned as requested. Because of the tremendous cooperation received, the testing program is complete and the comparisons with the 1956 results (which were also 100 percent) will be more reliable. Your part in this is gratefully acknowledged.

We anticipate that early in the fall term the school will be sent the results for your school along with the comparable results for all Edmonton schools.

Again, may we thank you for your participation in the study.

Very sincerely yours,

SCTC/dc

S.C.T. Clarke, Director, Special Sessions
V. Nyberg, Department of Educational Psychology
W.H. Worth, Dean, Faculty of Education

SPECIAL SESSIONS
4-107 EDUCATION II

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA
T6G 2G5

APPENDIX 12

June 20, 1977

Re: Edmonton Grade III Achievement: 1956-1977 Comparisons

Dear Principal,

This letter is to thank you, and your school, for participating in the study. Without the ready cooperation of yourself and the principals of the other 115 schools in the study, it could not have been successfully completed. The hours of effort voluntarily devoted to the study is deeply appreciated.

The attachment to the April 4, 1977 issue of the Staff Bulletin asked for information on the instruction for administering the tests which were used in the 1956 study. What we wanted were the general instructions: the time of day, the time frame (eg. last two weeks in May), and the like. We didn't get any response. Fortunately, the detailed instructions for administering the tests were available in the test manuals.

Several principals indicated that teachers could have done an adequate job of administering the ability tests. Agreed. However, we wished to replicate as closely as possible the 1956 procedures. University students, no doubt young and inexperienced, administered the ability tests then. We wished to avoid the charge that "the 1977 study showed different results because the procedures used were different". So, in the present study, university students again administered the ability tests.

It is a pleasure to be able to report that the testing was successfully completed in all schools, that the test packages have all been returned, and that 100 percent participation has been achieved. This splendid response and complete return makes the comparisons much more dependable. In the 1956 study the return was also 100 percent. Your part in this fine performance is again acknowledged.

As soon as they become available we will be sending you the results of your school along with the comparable results for all of the Edmonton schools.

Again, may we thank you for your generous participation in the study.

Very sincerely yours,

SCTC/dc

S.C.T. Clarke, Director, Special Sessions
V. Nyberg, Department of Educational Psychology
W. H. Worth, Dean, Faculty of Education

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY
EDUCATION CENTRE—NORTH WING
TELEPHONE (403) 432-5245

FACULTY OF EDUCATION
THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA
CANADA T6G 2G5

APPENDIX 13

December 15, 1977

RE: EDMONTON GRADE III ACHIEVEMENT:
1956-1977 COMPARISONS

Dear Principal:

You may recall that the study was conducted in May-June 1977. We wrote to the school June 20, thanking all who took part, and promised to send you the results for your school, along with the comparable results for all of the Edmonton schools, as soon as they became available. This letter is to apologize for the delay.

We are indeed sorry that the findings were not sent out sooner, and at least before Christmas. There was a series of delays. It was September 19 before the tapes with the data were ready. The required computer runs were not available until November 21. The report on the study was not completed until December 2. On that day 25 copies were delivered to Alberta Education, which was to produce 700 copies for distribution when the results were cleared for release by the Minister of Education. The plan was that each school would be sent a copy of the report, and the next day the Minister would make a public announcement. This timing was deemed necessary since the results for all Edmonton schools constitute the findings of the study.

We are now informed that this timing precludes sending you the results before Christmas, and that it will probably be sometime in January before they will be released. The delay is regretted and, we hope, explained.

Merry Christmas,

/m

S.C.T. Clarke, Professor Emeritus
V. Nyberg, Department of Educational Psychology
W.H. Worth, Dean, Faculty of Education

GATES ADVANCED PRIMARY READING TESTS

For Grade 2 (Second Half) and Grade 3

Type 1. Word Recognition

FORM 1

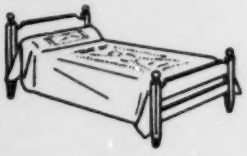
Write your name here . . . . . .

When is your birthday? . . . . . How old are you? . . . . . .

Date . . . . . Grade . . . . . School . . . . . .

did egg

dog two



be bed

bag she

may make

come milk

horse play

hose house

To the Examiner: 1. See that each child has a pencil. 2. Distribute papers. 3. Have children fill in blanks at the top of the page (with your help). 4. Instructions to children: "I want you to look at the first picture, this one up here (holding up your copy and pointing to the picture of the dog). Next to it there are some words. One of the words goes with the picture. You are to draw a ring around that one word that tells about the picture. Put your finger on the word that belongs with the picture. What is it? (Let one child answer.) That's right, 'dog.' The four words are 'did,' 'egg,' 'dog,' and 'two' (pointing to the words on your own copy and making sure children look up at your copy). We are going to draw a ring around the word 'dog' because that's the one *that tells the most* about the picture. Everyone find the word 'dog' on your paper and draw a ring around it. (Check to make sure children have marked the correct word.) Now look at the box right underneath that one. Find the word there that goes with the picture. What is it? (Let a child answer.) That's right, 'bed.' The four words are 'be,' 'bed,' 'bag,' 'she.' We are going to draw a ring around the word 'bed' because that's the one that tells us the most about the picture. Everyone find the word 'bed' and draw a ring around it. (Check to make sure that each child has marked the correct word. Continue in the same way for the third and fourth boxes. When you are illustrating with your copy ask the children to look up if need be.)

Do not open your books until I tell you to. Now I am going to show what we are to do next. Inside the book are some more pictures and words. (Examiner holds up copy of the test showing the inner pages.) You are to do the first one, then the next one below it, etc. (Examiner points down first column, then second, etc., and also demonstrates order on all three pages.) As soon as you have drawn a ring around the one word for one picture, go right ahead and do the next one. Now remember, first you are to look at the picture, then at the words next to the picture, then find the one word that goes best with the picture and make a ring around that one word. Make a ring around one word only for each picture. Do you understand? All right. Open your books and BEGIN. Go ahead." 5. Inspect the work of each child; see that each works from top to bottom of columns and that each follows the pages in order. Urge children individually to try the examples in order but *do not tell them the answers.* Discourage dawdling over difficult problems; tell them to try the next. Watch for children who make rings indiscriminately and tell them to make only one ring for each picture. 6. The signal STOP is given at the end of 15 minutes. Collect papers immediately. 7. The score is the number of exercises marked correctly minus one-third the number incorrect. If more than one word in an exercise is marked, that exercise is scored as incorrect. For further details see the Manual of Directions.

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COLUMBIA UNIVERSITY, NEW YORK

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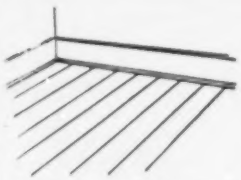
	land	been
	floor	gold
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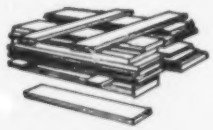
	only	before
	bread	great
	lost	food
	man	fire
	green	horse
	woman	world
	valley	village
	snow	settle
	doctor	finger
	dinner	ocean
	plate	stamp
	swim	stair

	orange	carriage
	occupy	secret
	lumber	recover
	lover	button
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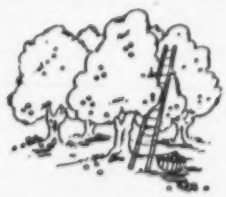
	string	stroke
	knee	ring
	hang	knew
	notice	forget
	stream	forest
	loose	swift
	worse	sword
	period	forehead
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	inquire	author

gross greedy

prisoner grocer

jacket hatch

hatchet hateful

distant meadow

frost merchant

harbor annual

anchor appetite

onion onward

opinion ourself

slender slipper

closet supper

arrange arrow

owner hero

veil vigor

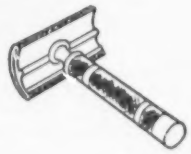
rail vice

stubborn trample

stumble stately

chirp chip

chill sharp

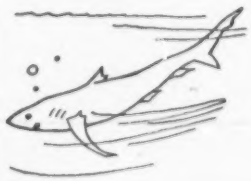


raisin realize

razor labor

fast mast

task mask



shamble shark

sheer hark

strike paint

study farm

final knife

fierce success

thread temple

needle thorn

weave military

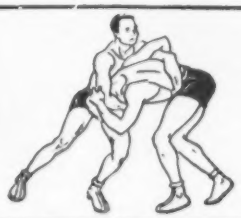
mystery mirror

gymnasium grassy

gurgle gypsy

musician physician

museum mysterious

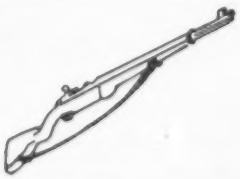


wriggle nestle

wrestle wringer

dragon dying

feeble dwelling



weapon weave

poison modest

statue slumber

glitter slope

advertise admiral

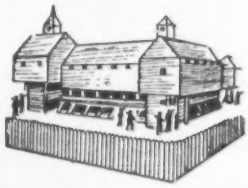
moral affirm

medical medal

model meddle

arbor argue

harbor apron



glimmer garrison

comparison garter

doughnut drawbridge

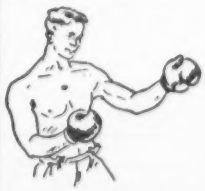
dormitory donation

chocolate chandelier

chimpanzee chiffonier

equality epaulet

equestrian questioner



pulverize pursuer

puppet pugilist

rheumatic rhythmic

rhetorical rickety

GATES ADVANCED PRIMARY READING TESTS

For Grade 2 (Second Half) and Grade 3

Type 2. Paragraph Reading

FORM 1

Write your name here . . . . . .

When is your birthday? . . . . . How old are you? . . . . . .

Date . . . . . Grade . . . . . School . . . . . .

1. Put an X on the ball.

3. Draw a line under the little book.

2. Draw a line around the milk bottle.

4. Draw a line from the pig to the tree.

To the Examiner: 1. See that each child has a pencil. 2. Distribute papers. 3. Have children fill in blanks at the top of the page. 4. Instructions to children: "We are going to see how well you can read. Do you see the stories and pictures on the front page of your booklet? Everyone look at the first story—up here (illustrating with your own copy). What does it say to do? (Have child answer.) That's right, put an X on the ball. Everyone find the ball and put a cross on it. Be sure you put it right on the ball. (Check to see that they all have marked it correctly.) Now look at the box right under that one. What does this story tell you to do? (Have child answer.) That's right, draw a line around the milk bottle. Everyone find the milk bottle on your paper and draw a line around it. Be sure to put it all around the bottle exactly as the story asks you to. (Check to make sure it is done correctly.) Now look at the first box on the next side—up here (illustrating with your own paper). What does that story say to do? (Have pupil answer.) That's right, draw a line under the little book. Be sure you find the little book, and be sure you draw the line under it exactly as the story asks you to. (Check to make sure papers are marked correctly.) Now look at the box under that one. What does this story ask you to do? (Have pupil answer.) That's right, draw a line from the pig to the tree. Do it on your paper. Be sure it goes from the pig to the tree exactly as the story asks you to. (Check to make sure it is done correctly.) **Do not open your books until I tell you to.** Now I am going to show you what we are to do next. On the inside of the book are some more pictures and stories. (Examiner holds up a copy of the test showing the inner pages.) You are to do No. 1 (Examiner points to it on his own copy), then go on and do No. 2, then do the next one, and the next one, etc. (Examiner points down first column, then second, etc., and also demonstrates order on all three pages.) As soon as you have finished one story, you must go right ahead and do the next one right below it. Now remember, first you are to read the story below the picture; then you are to take your pencil and do *exactly* what the story tells you to do. Do you understand? All right. Open your books and BEGIN. Go ahead." 5. Inspect the work of each child; see that each works from top to bottom of columns and that each follows the pages in order. Urge the children individually to try the examples in order, but *do not tell them the answers.* Discourage dawdling over difficult problems; tell them to try the next. 6. The signal STOP is given at the end of **25 minutes.** Collect papers immediately. 7. The score is the number of directions which are followed correctly. The mark made *must be* the one specified in "the story" to be correct. For further details with respect to this test see the Manual of Directions.

BUREAU OF PUBLICATIONS, TEACHERS COLLEGE
COLUMBIA UNIVERSITY, NEW YORK

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10-38

1. Put an X on the little white kitten with black spots on his back.

5. Nuts grow on trees. Draw a line from the squirrel to what he must climb to get his food.

2. The hen has just laid an egg. Draw a line from the hen to her egg.

6. People buy newspapers. They like to read the news. Draw a line under the boy who has newspapers to sell.

3. People live in houses. Animals live in barns. Put an X on the place where the animals live.

7. Mother set the table. She forgot the napkin at this place. It belongs next to the fork. Mark an X where the napkin belongs.

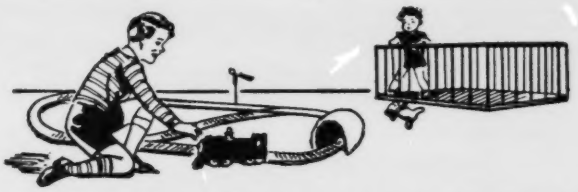
4. Every morning this boy combs his hair. Draw a line from the boy to what keeps his hair neat.

8. In the fall the maple trees lose their leaves. The pine is green all winter. Draw line under name of tree which does not lose its leaves.

9. In this quiet village the church bells ring on Sunday morning. All the people go to church. Put an X on the place where the people go on Sunday morning.

13. In the West some wild horses still live on the plains. Once a year men ride out to catch them. Find a picture of a horse that has not been tamed. Put an X on him.

10. Some children are playing on the beach. They want to dig in the sand. Father is bringing them something to use. Draw a line from it to the children.



14. Baby is playing in his pen. He has dropped his toy. Brother will get it for him. Look for the toy. Draw a line from the toy to the one who dropped it.

11. A bicycle has two wheels. Wagons and cars have four wheels. Engines often have six or eight. Draw a line under something that has two wheels.

15. We had a big Thanksgiving dinner. First came soup and then turkey with vegetables. Last came pie and cheese. Make an X on the picture of the first thing eaten.

12. In the early days of our country people had to hunt in the woods for their food. They shot deer, rabbits, and even bears. Draw a line from the hunter's gun to something he shot in the woods.

16. Peas, beans, cabbage, and lettuce are green vegetables. Corn is a vegetable too, but it is yellow or white. Draw a line under a vegetable that is not green.

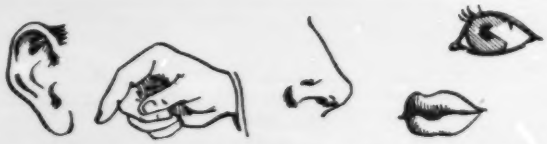
17. Arthur Brown lives on a large estate. Once a year his gardens are open to the public. Then the entrance gates are opened wide and the people drive in. Draw a line under the high fence which surrounds this estate and mark an X on what is opened to the public once a year.

21. This road has a dangerous curve in it. If people were warned of the curve there would be fewer accidents. Mark X where you would put a sign to warn cars traveling east. Mark O on the road to show where you would put a sign to warn cars traveling west.

18. Fans have long been in fashion. Thousands of years ago palm leaf fans were waved in Egypt. Beautiful ladies once carried feather fans to balls. Today we have electric fans whose blades are rubber. Put an X on the feather fan. Draw a line around the modern fan.

TRAIN	TRACK		REMARKS
NO. 42	NO. 18	ARRIVES	ON TIME
NO. 110	NO. 30	DEPARTS	11:42 A.M.
NO. 14	NO. 6	ARRIVES	10 MIN. LATE
NO. 7	NO. 26	DEPARTS	1 P.M.

22. Railway stations post arrivals and departures of trains on blackboards similar to the one above. If you wish to meet Train No. 42, it will arrive on time, coming in on Track No. 18. Draw a line around the number of the train that will be ten minutes late. Place an X on the track number of the train departing at 11:42 A.M.



19. Our five senses — seeing, hearing, smelling, tasting, and touching - - are represented by the pictures above of an eye, an ear, a nose, a mouth, and a hand. Which picture represents the sense of touch? Mark an X on it. Which picture represents the sense of smell? Draw a line around it.

23. From the stalks of the blue-flowered flax plant the ancient Egyptians wove linen to wrap their dead. Linen is still made from flax, but of greater importance is the oil from its seeds, used in making paint. Put an X on the part of the plant used for linen. Draw a line around the picture showing the use of a modern product of flax seeds.

20. Mary is making an apron. She is going to trim it with lace and ribbons. The lace will go around the edge of the apron and a bow of ribbon will go on each pocket. Draw a line from each bow to its place on the apron. Mark an X on what will go around the edge of the apron.

24. A thermometer measures temperature. Mercury, enclosed in a glass tube, rises when heat increases and contracts when heat decreases. We read the temperature in degrees above and below zero. Put an X on the word that tells how mercury acts when it grows colder. Draw a line under the word that tells in what form temperature is read.

Primary • GRADES 1-2-3-L4 • form CC

California Achievement Tests
Complete Battery

READING — ARITHMETIC — LANGUAGE

(Formerly Progressive Achievement Tests — Primary Battery)

DEVISED BY ERNEST W. TIEGS AND WILLIS W. CLARK

Reading

TO BOYS AND GIRLS:

This booklet has some games which you will like. They will show how many words you know and how well you can read. Do as many of them as you can.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

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1

DIRECTIONS: Look at the words below. If two words are the same or mean the same, write S on the dotted line between them. If they mean different things, write D.

dog.....*S*.....dog
boy.....*D*.....girl

TEST 1 — SECTION A

Diagnostic Notes

1. can.....can
2. the.....us
3. teach.....when
4. was.....saw
5. rich.....rich
6. dab.....bad
7. tab.....bat
8. though.....through
9. closed.....closed
10. plane.....plant
11. *sent*.....*sent*
12. *this*.....*these*
13. *store*.....*store*
14. *protection*.....*prediction*
15. RILL.....SILL
16. INCLINE.....INCLINE
17. REPORT.....RESORT
18. INVITE.....invite
19. *process*.....POSSESS
20. residential.....*residential*

Sec. A Score
(number right).....

2

DIRECTIONS: Look at the boxes below. I shall read one word in each box. You are to draw a line under it.

go	ball
have	this
run	come

Diagnostic Notes

1.	2.	3.
do	dog	ring
man	cat	said
foot	run	sing
4.	**5.**	**6.**
red	goat	shoulder
ride	got	should
rode	good	soldier
7.	**8.**	**9.**
hose	purpose	rabbit
horse	purchase	rooster
house	promise	round
10.	**11.**	**12.**
foot	*pike*	*produce*
lad	*hike*	*refuse*
hay	*bike*	*promise*
13.	**14.**	**15.**
TOY	THIN	THOUGH
GIRL	THEN	THROUGH
COW	THAT	THOROUGH

Sec. B Score
(number right).....

3

DIRECTIONS: Look at the boxes below. See the words with numbers in front of them. You are to draw a line from each of these words to a word on the other side which means the opposite.

0. black	green big
0. little	white run

1.	cold	and warm
2.	go	come which
3.	man	woman wash
4.	slow	down fast
5.	light	dark bad
6.	lost	first happy
7.	good	hard found
8.	sad	went above
9.	up	last poor
10.	first	down go
11.	came	come path
12.	leave	late dark
13.	arrive	noisy gentle
14.	bright	crooked pleasure
15.	rough	numb careful
16.	straight	false industrious
17.	silent	quiet ignorant
18.	true	
19.	lazy	
20.	careless	

TEST 1—SECTION C

Diagnostic Notes

Sec. C Score
(number right).....

4 **DIRECTIONS: Read each sentence below and do what it says.**

Draw a line under this word: run

TEST 2—SECTION D

Diagnostic Notes

1. Draw a line under this letter: E
2. Write this word: *dog*.. .....
3. Put an 0 after this 7 .....
4. Draw a line under one of these words:

   boy take run go
5. Cross out all the numbers:

   G 3 H 5 S K
6. Write the missing letter in this word:

   b.....y boy
7. Write a word that begins with d.

   .....
8. Cross out a letter to make **is** out of this word: **h i s**
9. Draw a line under the name of the largest animal:

   dog mouse horse kitten
10. Write the number of this sentence on this line:.....

Sec. D Score (number right).....

5

DIRECTIONS: Read each of the stories on this page. Do what it says under each story.

TEST 2—SECTION E

Diagnostic Notes

Jim has a goat.
The goat's name is Billy.
Nell has a rabbit.
The rabbit's name is Bunny.

✓ **Draw a line under each right word below:**

1. Jim has a
   rabbit dog goat
2. Bunny is the name of a
   kitty dog rabbit
3. Billy is the name of the
   boy goat rabbit
4. The rabbit belongs to
   Jim Mother Nell

Once there was a little girl named Bess. She visited her grandfather, who lived near a circus. There were many elephants, monkeys, and lions in the circus. She liked the monkeys best.

✓ **Draw a line under each right word below:**

5. This story tells about a little
   boy girl doll
6. Bess' grandfather lived near a
   mountain hill circus
7. The little girl liked the
   birds horses monkeys
8. The girl was
   large little sad

"May we play now?" said John.

"Yes, you may play for a while," answered mother.

✓ **Draw a line under each right word below:**

9. John (asked told) something.
10. Mother (asked told) something.

22?

Sec. E Score
(number right) .....

6

DIRECTIONS: Read each of the stories on this page. Do what it says under each story.

TEST 2—SECTION F

Diagnostic Notes

Many years ago there were no large cities in this country. People lived in cabins made of logs. They wore clothes made from wool and skins. They hunted with guns to obtain game for cooking.

✓ **Draw a line under each right word below:**

1. A man's home was a
   tent cabin wigwam
2. Food was secured by
   farming hunting selling
3. The people used wool and skins to make
   homes clothing weapons
4. This story tells about the
   past present future

In most places where alfalfa is grown, it is harvested at least three times a year. In the South, it may be cut four or even five times during the growing season. Many farmers grow alfalfa to enrich the soil as well as to furnish feed for livestock. When alfalfa is harvested, it is often piled in large stacks or made into bales of hay.

✓ **Draw a line under the right words below:**

5. Alfalfa may be cut
   as often as it is ready as many times as is desired
   in the summer only
6. It seems that alfalfa is
   useless very useful unnecessary
7. To harvest means
   to exhaust to irrigate to cut
8. For alfalfa to mature takes at least
   a year one-half year at least two months

This is copied from a table of contents:

CHAPTER		PAGE
1.	The Vacation Begins	1
2.	The Trip	7
3.	The Camp	15
4.	The Storm	31
5.	The Ride Home	45

9. Page 15 will tell something about.....
10. Page 9 will tell something about.....

Sec. F Score
(number right).....

Arithmetic

TO BOYS AND GIRLS:

This test booklet has some games you will like. They will show how well you can think and mark problems. Do as many of them as you can.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

1

DIRECTIONS: Look at the sentences with dotted lines. Decide what number belongs on each dotted line and write it there.

TEST 3 — SECTION A

1. There are .....dogs.

Diagnostic Notes

2. There are.....birds.

3. Write in the numbers that are left out:

   1 2 3 ... 5 ... 7 8 10

4. Write in the numbers that are left out:

   11 .... 14 15 .... 18 19

5. Write these numbers:

   eight..... seventeen..... twenty-three.....

Sec. A Score
(number right).....

2 **DIRECTIONS:** A number belongs on each dotted line below. Read each sentence. Write the number that belongs on each dotted line.

TEST 3 — SECTION B

1. There are.....nickels in a dime.

Diagnostic Notes

2. There are.....cents in a dime.

3. There are.....nickels in a quarter.

4. Write two dollars and twenty-five cents in numbers: .....

5. Write five dollars and six cents in numbers: .....

Sec. B Score
(number right).....

3

DIRECTIONS: Read what it says below and do what it tells you to do.

TEST 3 — SECTION C

Diagnostic Notes

✓ **Look at these words:**

night ten morning
seven year twenty

✓ **Three of the above words are numbers, and three are about time. Write these words on the right lines below.**

1. Numbers

.....

.....

.....

2. Time

.....

.....

.....

---

3. The time is

.....o'clock

4. The time is

.....o'clock

✓ **Draw a circle around the larger number in each box.**

(5)	(6)	(7)
15 21	53 35	127 172

✓ **Write what each Roman number means on the line below it.**

(8)	(9)	(10)
III	VI	XX

.....

Sec. C Score
(number right).....

4 **DIRECTIONS:** Read what it says below. Show your answers by drawing lines under the right words and writing the correct signs on the dotted lines.

TEST 3 — SECTION D

✓ **Draw a line under the right word:**

Diagnostic Notes

1. + means add subtract multiply divide
2. — means add subtract multiply divide

✓ **Write in the correct sign:**

3. 3.....3 = 6
4. 4 ÷ 2.....2
5. 2.....7 = 14

✓ **Draw a line under the right word:**

6. yr. means time money weight
7. hr. means time money weight
8. $ means time money weight
9. ¢ means time money weight
10. lb. means time money weight

Sec. D Score
(number right).....

5 **DIRECTIONS: Read the problems below. Write each answer on the dotted line. Draw a line under the word that shows what you did.**

TEST 3 — SECTION E

Diagnostic Notes

1. If Harry had 3 marbles and John gave him 4 more, how many marbles would he then have?

Answer.....

✓ **In this problem I**

add **subtract** **multiply** **divide**

---

2. Mary had 5 dolls and gave 2 of them to Jane. How many dolls did Mary have left?

Answer.....

✓ **In this problem I**

add **subtract** **multiply** **divide**

---

3. William had 8 pennies. He gave 3 to John and 2 to Ned. How many did he have left?

Answer.....

✓ **Write how you worked this problem on the line below.**

---

4. Henry's father has 5 cows. John's father has two times as many. How many cows has John's father?

Answer.....

✓ **Write how you worked this problem on the line below.**

Diagnostic Notes

5. Mary bought 10 oranges. She ate 3 and gave Betty 3. How many oranges did she have left?

Answer.....

✓ **Write how you worked this problem on the line below.**

_____

6. John has 1 book, Hal has 3 books, and Jim has 5 books. If they divide them equally, how many books will each have?

Answer.....

_____

7. Robert's class of 40 pupils made a paper collection in order to buy a picture for their room. The papers sold for $6.00 and the picture costs $10.00. How much more money must each child earn in order to buy the picture?

Answer.....

_____

8. Charles is earning money to buy a bicycle. He earns $2.00 a week delivering papers and has $20.00 in his savings account. If the bicycle costs $30.00, how many weeks must he work to buy it?

Answer.....

_____

9. Tom has ten 3-cent marbles, two 5-cent marbles, and ten which he bought at two for 5 cents. How much did his marbles cost?

Answer.....

_____

10. After she has paid $2.00 for a present, 25 cents for pencils, and 25 cents for bus tickets, Dorothy may have the amount left out of the $3.00 her mother gave her. How much will that be?

Answer.....

_____

Sec. E Score (number right).....

6

DIRECTIONS: Here are some addition problems. Add the two numbers each time and write your answer under them.

TEST 4 — SECTION F

1.	1 +2	3 +3	6 +1	7 +1	1 +3
2.	0 +0	0 +4	8 +2	4 +4	2 +9
3.	8 +8	5 +1	8 +0	9 +2	7 +7
4.	2 +7	1 +9	1 +8	3 +0	4 +1
5.	5 +0	2 +1	0 +1	4 +6	5 +4
6.	0 +9	0 +7	6 +3	1 +5	3 +0
7.	8 +3	4 +3	2 +5	3 +5	3 +2
8.	4 +8	3 +7	6 +5	7 +4	8 +4
9.	7 +5	4 +9	8 +9	6 +9	6 +4
10.	6 +8	8 +5	7 +8	7 +9	9 +8

Diagnostic Notes

Sec. F Score
(number right ÷ 5).....
Use nearest whole number.

7

DIRECTIONS: Read each of these problems. You are to subtract, or take away. Write the answer under each problem.

TEST 4 — SECTION G

Diagnostic Notes

1.	1 −1	7 −7	4 −4	5 −3	9 −1
2.	6 −0	9 −9	5 −2	3 −1	0 −0
3.	4 −1	2 −0	5 −5	5 −0	2 −1
4.	9 −8	10 −7	7 −3	8 −8	2 −2
5.	8 −0	12 −6	7 −0	7 −5	10 −5
6.	12 −8	10 −7	10 −6	9 −6	8 −2
7.	14 −7	11 −7	12 −9	11 −5	8 −3
8.	12 −3	11 −6	11 −9	11 −8	12 −7
9.	15 −8	14 −8	13 −7	13 −5	12 −5
10.	17 −9	15 −7	14 −5	14 −9	16 −7

Sec. G Score
(number right ÷ 5).....
Use nearest whole number.

8

DIRECTIONS: The next problems are "times." You multiply, like 3 x 2 = 6. Write the answers under the problems.

TEST 4 — SECTION H

Diagnostic Notes

1.	1 ×3	5 ×1	5 ×2	1 ×7	2 ×1
2.	8 ×2	2 ×9	1 ×9	2 ×3	8 ×1
3.	4 ×5	5 ×5	4 ×3	7 ×2	1 ×6
4.	5 ×3	4 ×2	6 ×2	3 ×5	2 ×6
5.	5 ×7	0 ×0	3 ×6	9 ×5	5 ×6
6.	7 ×3	0 ×3	0 ×4	5 ×9	0 ×5
7.	8 ×3	2 ×0	6 ×5	4 ×0	9 ×0
8.	1 ×0	7 ×6	8 ×9	5 ×0	7 ×7
9.	8 ×8	4 ×9	8 ×0	1 ×1	5 ×8
10.	9 ×6	6 ×8	8 ×7	7 ×9	9 ×8

Sec. H Score
(number right ÷ 5).....
Use nearest whole number.

9

DIRECTIONS: Read the directions below and do as many problems as you can.

TEST 4 — SECTION 1

Diagnostic Notes

Add these numbers:

(1)
$$\begin{array}{r} 20 \\ +\ 3 \\ \hline \end{array}$$

(2)
$$\begin{array}{r} 27 \\ +\ 8 \\ \hline \end{array}$$

(3)
$$\begin{array}{r} 26 \\ 23 \\ +34 \\ \hline \end{array}$$

(4)
$$\begin{array}{r} 2651 \\ 3094 \\ +2303 \\ \hline \end{array}$$

Subtract:

(5)
$$\begin{array}{r} 43 \\ -\ 6 \\ \hline \end{array}$$

(6)
$$\begin{array}{r} 57 \\ -28 \\ \hline \end{array}$$

(7)
$$\begin{array}{r} 70764 \\ -45673 \\ \hline \end{array}$$

Multiply:

(8)
$$\begin{array}{r} 262 \\ \times\ 34 \\ \hline \end{array}$$

Divide:

(9) $4\overline{)16}$

(10) $35\overline{)3850}$

Soc. 1 Score
(number right) .....

Language

TO BOYS AND GIRLS:

This test booklet has some games you will like. They will show what you know about capital letters, periods, commas, and so forth, and how well you can spell and write. Do as many as you can.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

1 DIRECTIONS: Read the story and the poem below. Draw a line under each letter that should be a capital letter.

TEST 5 — SECTION A

Story

the boy's name is tom
he goes to school on seventh street
one day Miss smith said who
would like to find a poem
this is the poem tom found:

Poem

in winter I get up at night
and dress by yellow candle-light.
in summer, quite the othe way,
I have to go to bed by day.

2 DIRECTIONS: Read the story below. Write in the
periods (.)
commas (,)
question marks (?)
quotation marks (" ")
that have been left out of the story.

TEST 5 — SECTION B

Story

the boy's name is tom
he goes to school on seventh street
one day Miss smith said who
would like to find a poem
this is the poem tom found:

Poem

in winter I get up at night
and dress by yellow candle-light.
in summer, quite the other way,
I have to go to bed by day.

Sec. A Score (number right).....

Sec. B Score (number right).....

3

DIRECTIONS: Write the words that are pronounced.

TEST 6

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....
9. .....
10. .....
11. .....
12. .....
13. .....
14. .....
15. .....
16. .....
17. .....
18. .....
19. .....
20. .....
21. .....
22. .....
23. .....
24. .....
25. .....

Test 6 Score
(number right).....

DIAGNOSTIC ANALYSIS OF LEARNING DIFFICULTIES

1. Reading Vocabulary

A. WORD PARTS:

- 1-10 - - - - - Letter name words
- 4, 6, 7 - - - - Reversed words
- 11, 12, 13, 14 - Script
- 15, 16, 17 - - - Capitals
- 18, 19, 20 - - - Mixed, type faces

B. WORD RECOGNITION:

- 1, 2, 3, 11, 12 - - - - - Gross differences
- 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20 - Initial sounds or endings

C. MEANING OF OPPOSITES:

- 1-20 - - - - Basic vocabulary

2. Reading Comprehension

B. FOLLOWING SPECIFIC DIRECTIONS:

- 1, 2, 3 - - - Basic direction
- 4, 5, 6, 7, 8, 9, 10 - - - Direction requiring choice

C. DIRECTLY STATED FACTS:

- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 - - - Basic to average
- 11 - - - - - Significant detail
- 12 - - - - - Significance of detail

3. Visual Perception

- Visual discrimination
- Visual memory
- Visual sequence
- Visual closure

4. Auditory Perception

- Auditory discrimination
- Auditory memory
- Auditory sequence
- Auditory closure

5. Visual-Motor Integration

- Eye-hand coordination
- Eye movements

B. SIGNS AND SYMBOLS:

- 1, 2, 3, 4, 5 - - Meaning & use of signs
- 6, 7, 8, 9, 10 - Alphabetization

C. PROBLEMS:

- 1, 2, 4 - - - - - One-step
- 3, 5, 6 - - - - - Two-step
- 6, 7 - - - - - - Missing and unneeded
- 8, 9, 10 - - - - Estimating

4. Arithmetic Fundamentals

A. ADDITION:

- 1, 2, 3, 4, 5 - - - - Simpler combinations
- 7, 8, 9, 10 - - Harder combinations
- 2, 3, 4, 5, 6 - Zero difficulty

B. SUBTRACTION:

- 1, 2, 3, 4, 5, 6 - - - Simpler combinations
- 7, 8, 9, 10 - - Harder combinations
- 2, 3, 5 - - - - Zero difficulty

M. MULTIPLICATION:

- 1, 2, 3, 4, 5, 6 - - - - Simpler combinations
- 7, 8, 9, 10 - - Harder combinations
- 5, 6, 7, 8, 9 - - Zero difficulty

D. PROBLEMS:

- 1, 4 - - - - - - Zero difficulty
- 2, 3, 4 - - - - Carrying in addition
- 3, 4 - - - - - - Column addition
- 5, 6, 7 - - - - - Borrowing in subtr.
- - - - - - - - Two-place multiplier
- - - - - - - - Dividing

- 1, 2, 3 - - - - Pick words of sentences
- - - - - - - - Pictures of stories
- - - - - - - - Pictures of stories
- - - - - - - - Tell words of sentences
- 4, 5, 6, 7 - - - Pick lines of poetry

B. DICTATION:

- 1, 2 - - - - - - Syllables
- - - - - - - - - Common
- - - - - - - - - Spelling words
- 1, 2 - - - - - - Sentences, stories

6. Speaking - - - - - Oral speech
Expressiveness - - - - Oral speech

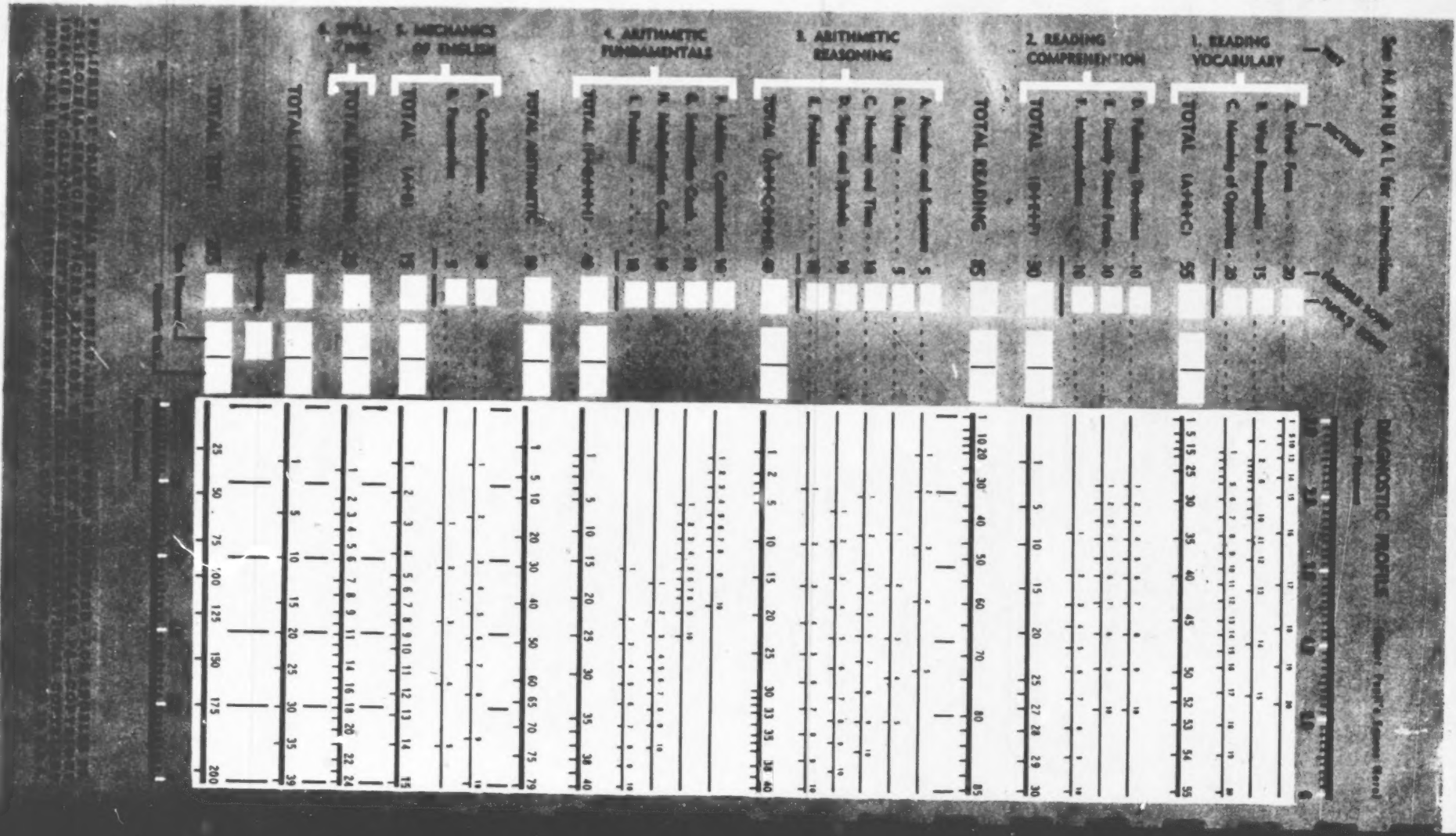
California Achievement Tests
primary GRADES 1-2-3-L4 form CC

DEVISED BY ERNEST W. TIEGS AND WILLIS W. CLARK

Name ..... Last ..... First ..... Middle ..... Grade ..... (CIRCLE ONE) Boy Girl

School ..... City ..... Date of Test ..... Month Day Year

Examiner ..... ( ) Pupil's Age ..... Date of Birth ..... Month Day Year



Primary • GRADES 1 - 2 - 3 • 1953 S-Form

California Short-Form Test of Mental Maturity

Devised by

ELIZABETH T. SULLIVAN, WILLIS W. CLARK, AND ERNEST W. TIEGS

TO BOYS AND GIRLS:

This test booklet has some games you will like. They will show how well you can think. Do as many of them as you can.

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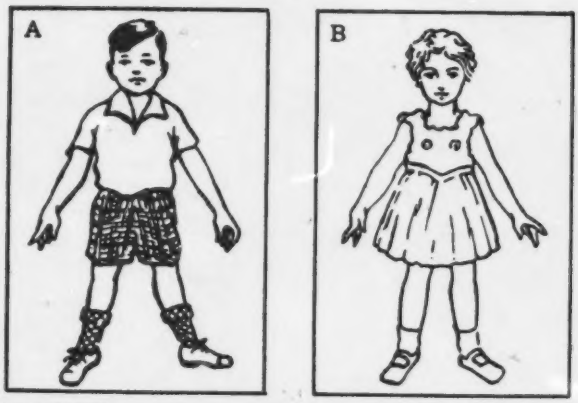
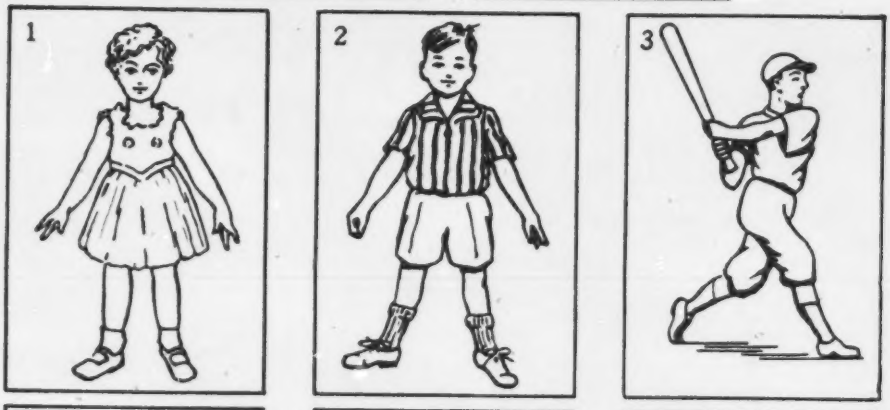
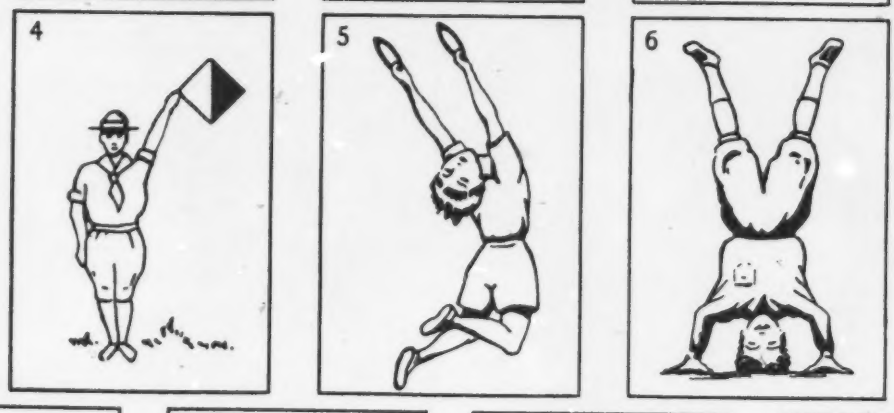
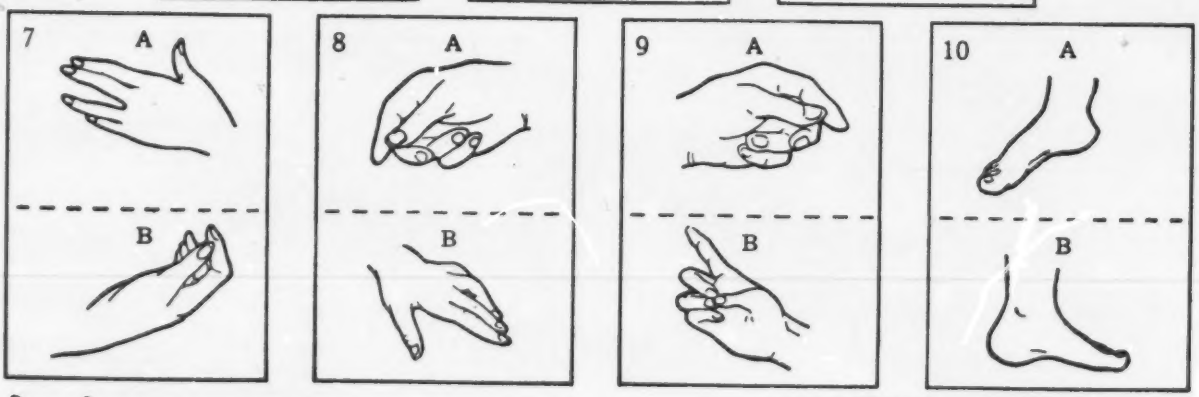
TEST 1.









Test 1 Score
(number right) .....

TEST 2.

C

D

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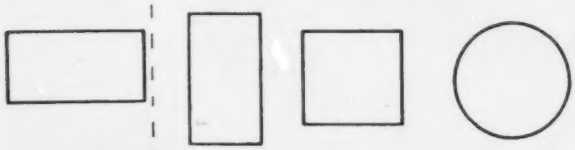

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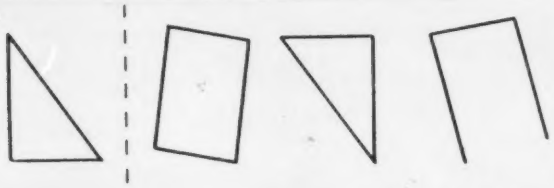

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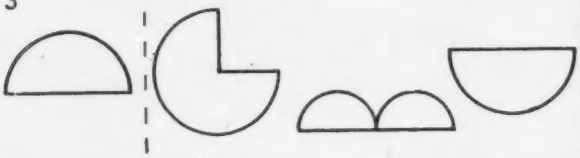

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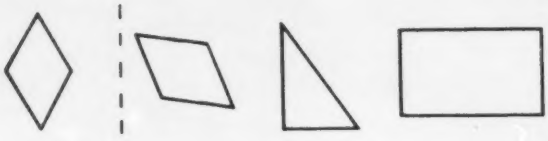

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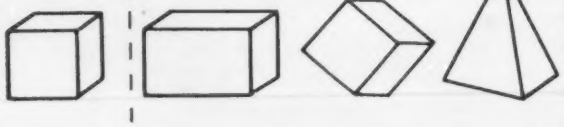

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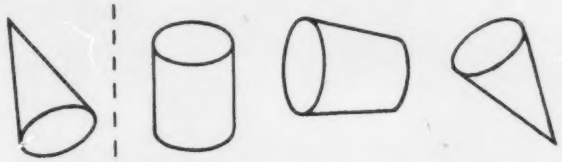

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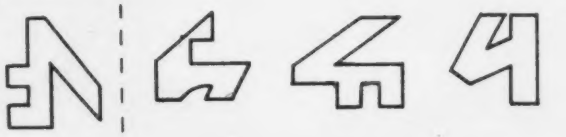

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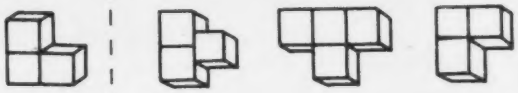

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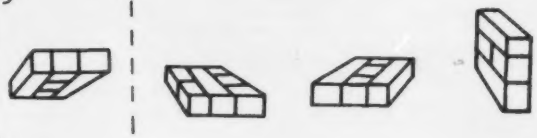

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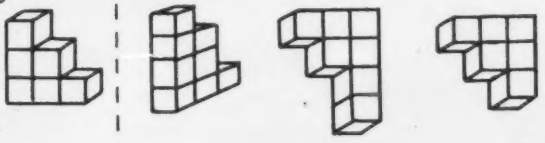

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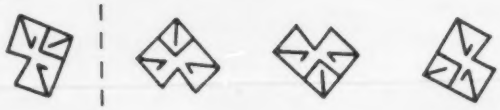


1 2 3 1 2 3

Test 2 Score
(number right) .....

TEST 3.

E

F

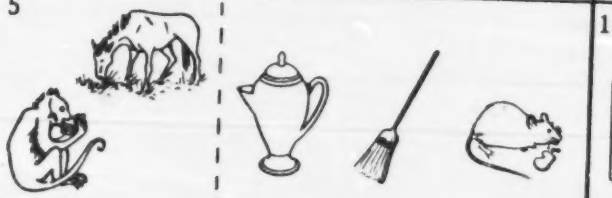
1

2

3

4

5



1 2 3

6

7

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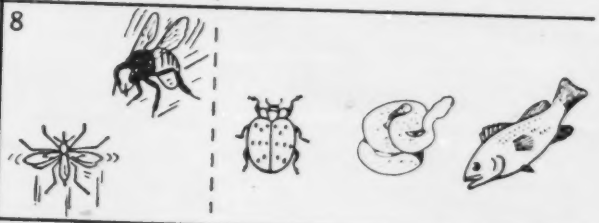

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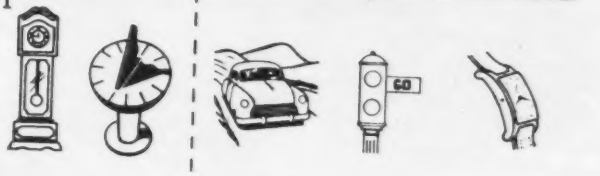

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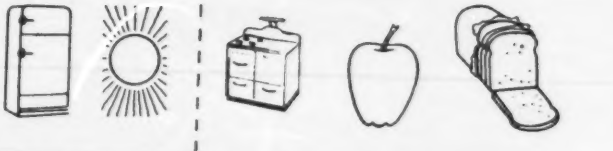


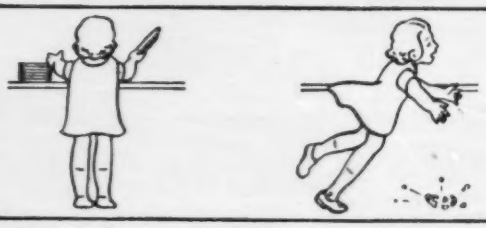
1 2 3

Test 3 Score
(number right) .....

TEST 4.

G

H

1 

2

3

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7

8

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11

12

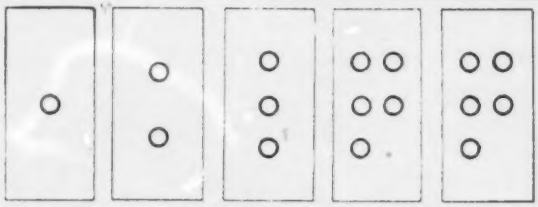
1 2 3 1 2 3

Test 4 Score
(number right).....

TEST 5.

I

J



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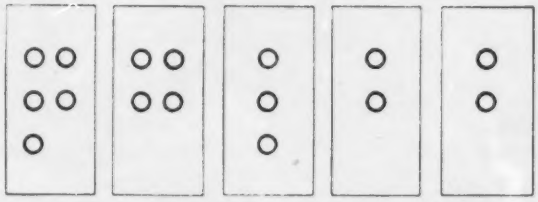

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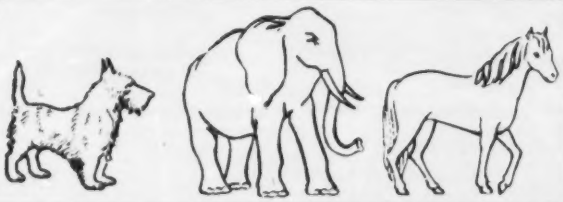

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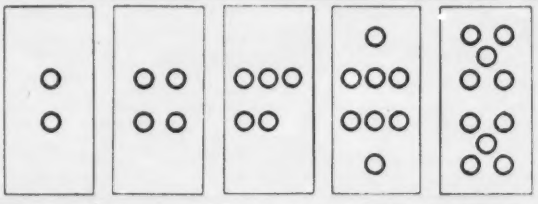

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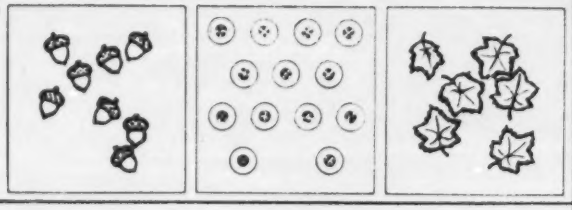

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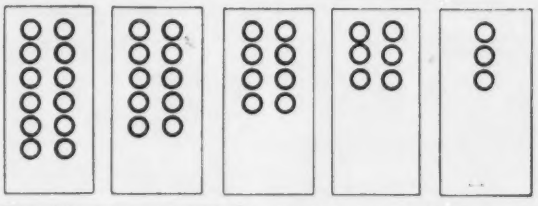

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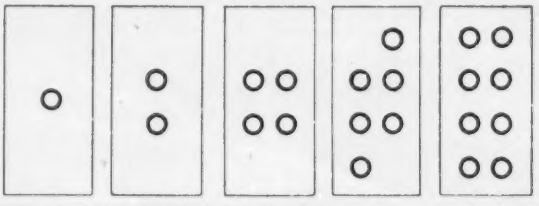

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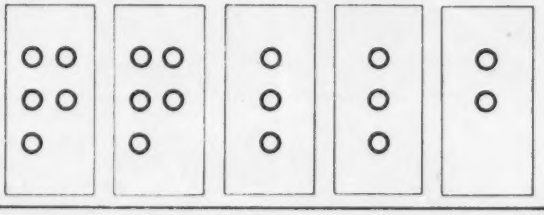

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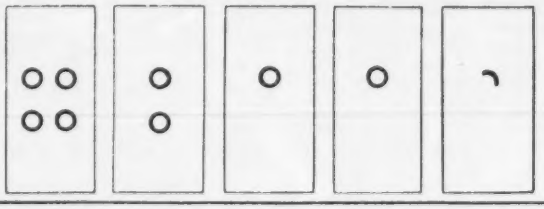
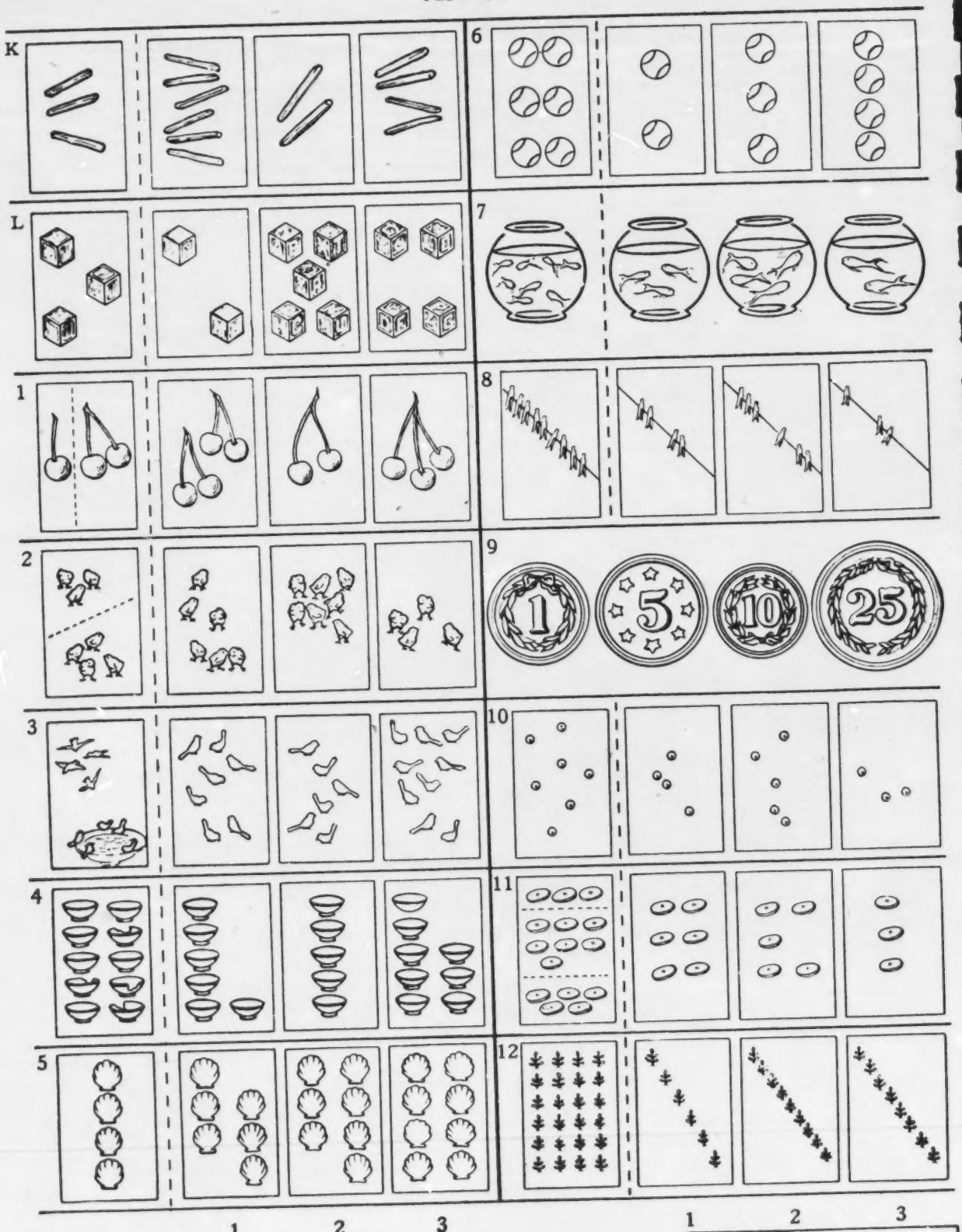


1 2 3 1 2 3 4 5

Page 7
SFP - 53

Test 5 Score
(number right) .....

TEST 6



Test 6 Score
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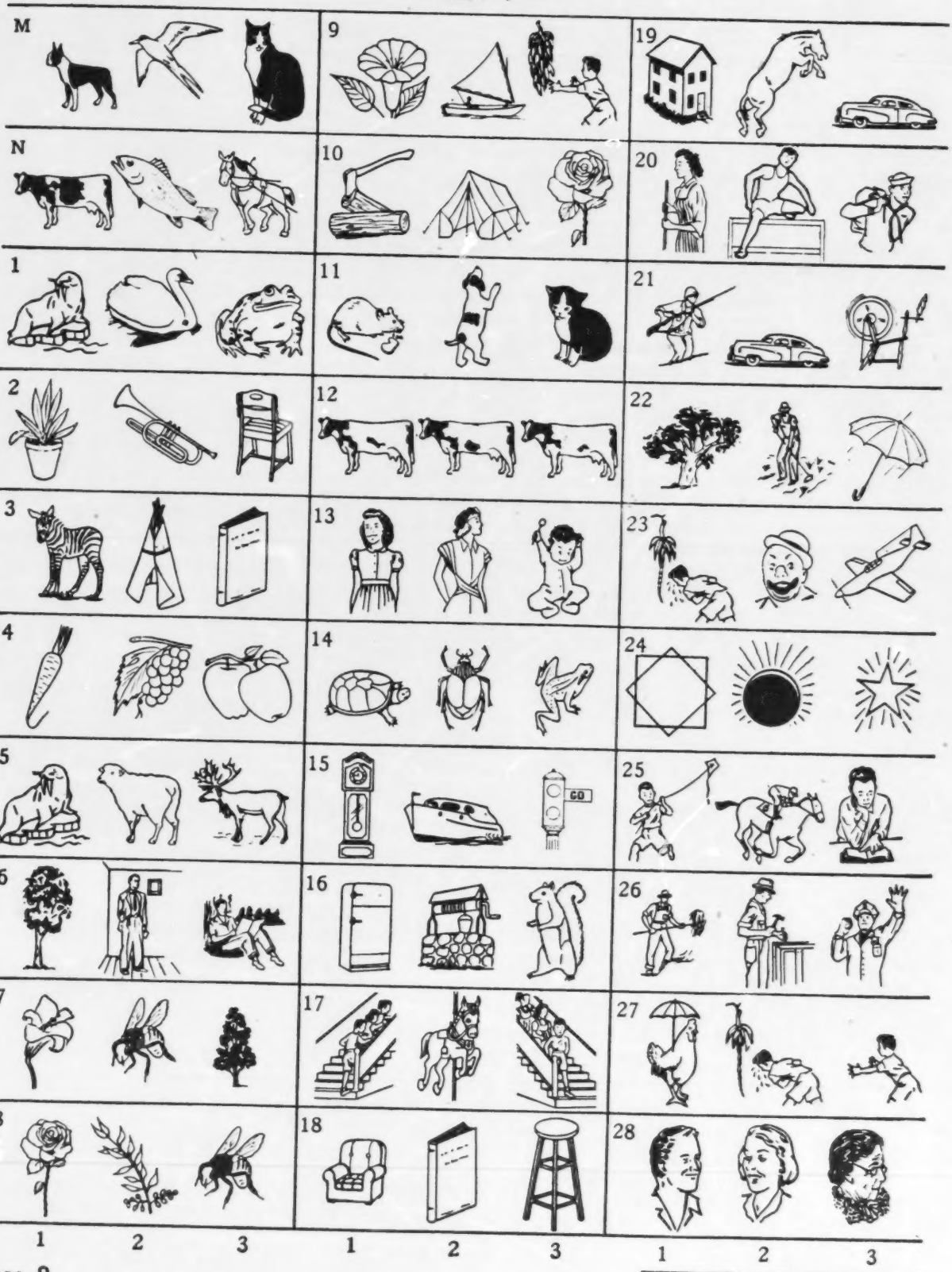
TEST 7



Page 9
SFP-53

Test 7 Score
(number right) .....

California Short-Form Test of Mental Maturity

primary GRADES 1-2-3 '53 S-form

DEVISED BY E. T. SULLIVAN, W. W. CLARK, AND E. W. TIEGS

Name ..... Grade ..... (CIRCLE ONE) Boy Girl
Last First Middle

School ..... City ..... Date of Test ..... Month Day Year

Examiner ..... (.....) Pupil's Age ..... Date of Birth ..... Month Day Year

See MANUAL for instructions.

DIAGNOSTIC PROFILE (Chart Pupil's Scores Here)

	Test	Possible Score	Pupil's Score
SPATIAL RELATIONSHIPS	1. Sensing Right and Left	10*	
	2. Manipulation of Areas	12*	
	TOTAL (1+2)	22	
LOGICAL REASONING	3. Similarities	12*	
	4. Inference	12	
	TOTAL (3+4)	24	
NUMERICAL REASONING	5. Number Series	12*	
	6. Numerical Quantity	12	
	TOTAL (5+6)	24	
VERBAL CONCEPTS	7. TOTAL VERBAL CONCEPTS	28	
	TOTAL MENTAL FACTORS	98	
	LANGUAGE FACTORS (4+6+7)	52	
	NON-LANGUAGE FACTORS (1+2+3+5)	46	
	CHRONOLOGICAL AGE Average Grade Placement Equivalent		
	INTELL. GRADE PLACEMENT		

* Non-language Tests

Mental Age — Mo. 48 60 72 84 96 108 120 132 144 156 168 — Yr. 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0

% -ile Rank for C.A.

KGN. TRANS. 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0

SUMMARY OF DATA

	TOTAL MENTAL FACTORS	LANGUAGE FACTORS	NON-LANG. FACTORS
SCORES			
MA divided by			
CA equals			
I.Q.			

INTELLIGENCE GRADE PLACEMENTS

253

254

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